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REPORT OF PROCEEDINGS

AT

PUBLIC HEARING REGARDING PROPOSED CLASSIFICATIONS

FOR THE

WATERS OF THE FRENCH BROAD RIVER BASIN

October 24, 1957

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North Carolina

State Stream Sanitation Committee

State Board of Health

Raleigh

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REPORT OF

PUBLIC HEARING ON THE FRENCH BROAD RIVER BASIN

POLLUTION SURVEY REPORT NO. 5 AND PROPOSED

CLASSIFICATIONS FOR WATERS OF THE BASIN

October 24, 1957

Introduction

This report contains copies of all materials, briefs, letters, etc., including a record of all comments and discussions, presented during the public hearing held by the State Stream Sanitation Committee relative to the report of pollution studies conducted in the French Broad River Basin and the classifications recommended for the various waters of the Basin. The hearing was held in Buncombe County Courthouse, Asheville, North Carolina, on October 24, 1957. The hearing was duly publicized in accordance with the requirement of the Statute and everyone was given ample opportunity to express his or her views concerning both the report findings and the suggested stream classifications.

Those sections of the Stream Sanitation Law, Article 21 of Chapter 143, General Statutes of North Carolina, which relate directly to the policy of the State concerning its water resources and the assignment of classifications to the waters of a given river basin, are given immediately following this introductory statement. The proposed classifications for the streams in the French Broad River Basin are listed in Tables 5, 10, and 15, beginning on pages 86, 168, and 210 respectively, of the French Broad River Basin Pollution Survey Report. The material presented and a record of the proceedings at the hearing appear in chronological order following the legal notice, which was published at least once in all counties within the Basin. The legal notice and other documents were also mailed to each person on the official mailing list and were sent to each county farm agent, wildlife protector and health officer in the Basin, to each municipality, industry, and individual contributing pollution to the waters of the Basin and to State and Federal Agencies having an interest in the problem.

Excerpt From Law Relating to Stream Sanitation

(Article 21, General Statutes of North Carolina)

SECTION 143-211. Declaration of Policy. It is hereby declared to be the policy of the State that the water resources of the State shall be prudently utilized in the best interest of the people. To achieve this purpose, the government of the State shall assume responsibility for the quality of said water resources. The maintenance of the quality of the water resources requires the creation of an agency charged with this duty, and authorized to establish methods designed to protect the water requirements for health, recreation, fishing, agriculture, industry, and animal life. This agency shall establish and maintain a program adequate for present needs, and designed to care for the future needs of the State.

SECTION 143-215. Water classification; standards and assignment of classifications.

(a) Duties of Committee Under This Section: The committee is hereby directed and empowered, as rapidly as possible within the limits of funds and facilities available to it, and subject to the procedural requirements of this Article:

(1) To develop and adopt, after proper study, a series of classifications and the standards applicable to each such classification, which will be appropriate for the purpose of classifying each of the waters of the State in such a way as to promote the policy and purposes of this Article most effectively;

(2) To survey all the waters of the State and to separately identify all such waters as the committee believes ought to be classified separately in order to promote the policy and purposes of this Article, omitting only such waters as, in the opinion of the committee, are insufficiently important to justify classification or control under this Article; and

(3) To assign to each identified water of the State such classification, from the series adopted as specified above, as the committee deems proper in order to promote the policy and purposes of this Article most effectively.

(b) Criteria for Classification: In developing and adopting classifications, and the standards applicable to each, the committee shall recognize that a number of different classifications should be provided for (with different standards applicable to each) so as to give effect to the need for balancing conflicting consideration as to usage and other variable factors; that different classifications with different standards applicable thereto may frequently be appropriate for different segments of the same water; and that each classification and the standards applicable thereto should be adopted with primary reference to an existing or a contemplated best usage to be made of the waters to which such classification will be assigned.

(c) Criteria for Standards: In establishing the standards applicable to each classification, the committee shall consider, and the standards when finally adopted and published shall state: The extent to which any physical, chemical, or biological properties should be prescribed as essential to the contemplated best usage.

(d) Criteria for Assignment of Classifications: In assigning to each identified water the appropriate classification (with its accompanying standards), the committee shall consider, and the decision of the committee when finally adopted and published shall contain its conclusions with respect to the following factors as related to such identified waters:

(1) The size, depth, surface area covered, volume, direction and rate of flow, stream gradient and temperature of the water;

(2) The character of the district bordering said water, including any peculiar suitability such district may have or any dominant economic interest or development which has become established in relation to or by reason of any particular use of such water;

(3) The uses which have been made, are being made, or may in the future be made, of such water for transportation, domestic consumption, industrial consumption, bathing, fishing and fish culture, fire prevention, the disposal of sewage, industrial wastes and other wastes, or any other uses;

(4) The extent to which such water is already receiving sewage, industrial waste, or other waste as a result of present or past usage of the water and the relative economic values involved in improving or attempting to improve the condition of such water.

(e) Proposed Adoption and Assignment of Classification: Prior to the adoption by the committee of the series of classifications and standards applicable thereto as specified in subparagraph (a) (1) of this Section, prior to the assignment by the committee of any such classifications to any waters as specified in subparagraph (a) (3) of this Section, and prior to any modification of any of such actions previously taken by the committee, the committee shall give notice of its proposed action and shall conduct one or more public hearings with respect to any such proposed action in accordance with the following requirements:

(1) Notice of any such hearing shall be given not less than 20 days before the date of such hearing and shall state the date, time, and place of hearing, the subject of the hearing, and the action which the committee proposes to take. The notice shall either include details of such proposed action, or where such proposed action, as in the case of proposed assignments of classifications to identified waters, is too lengthy for publication, as hereafter provided for, the notice shall specify that copies of such detailed proposed action can be obtained on request from the office of the committee in sufficient quantity to satisfy the requests of all interested persons.

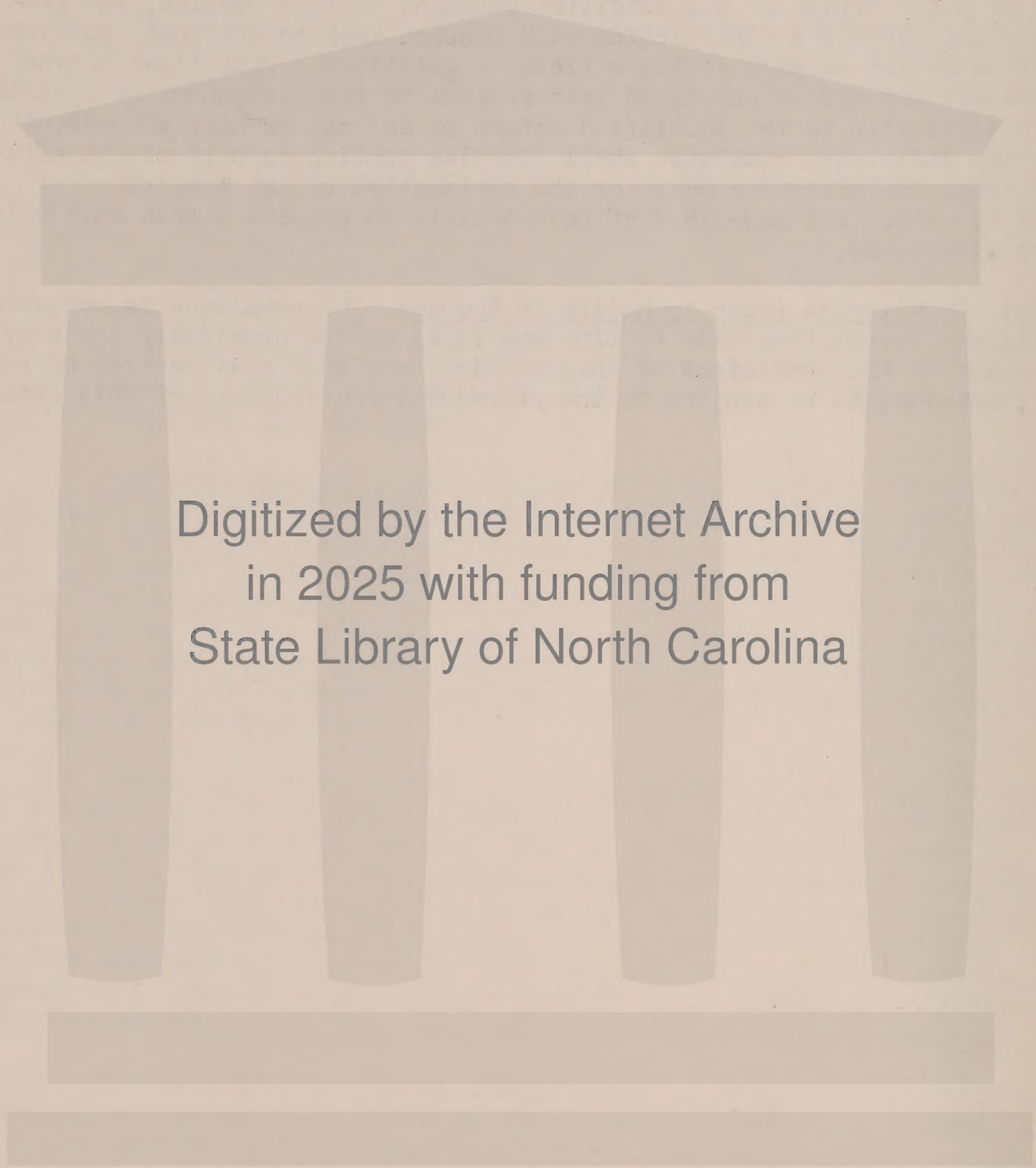
(2) Any such notice shall be published at least once in one newspaper of general circulation circulated in each county of the State in which the water area affected is located, and a copy of such notice shall be mailed to each person on the mailing list required to be kept by the committee pursuant to the provisions of Section 143-215.4.

(3) Any person who desires to be heard at any such public hearing shall give notice thereof in writing to the committee on or before the first date set for the hearing. The committee is authorized to set reasonable time limits for the oral presentation of views by any one person at any such public hearing. The committee shall permit anyone who so desires to file a written argument or other statement with the committee in relation to any proposed

action of the committee at any time within 30 days following the conclusion of any public hearing or within any such additional time as the committee may allow by notice given as prescribed in this Section.

(f) Final Adoption and Assignment of Classifications: Upon completion of hearings and consideration of sumbitted evidence and arguments with respect to any proposed action of the committee pursuant to this Section, the committee shall adopt its final action with respect thereto and shall publish such final action as part of its official regulations. When final action has been adopted and is published with respect to the assignment of classifications applicable to the identified waters of any one or more watersheds within the State, the committee shall likewise publish as part of its official regulations, the effective date for the application of the provisions of Section 143-215.1 and 143-215.2 of this Article to persons within such watershed or watersheds.

(g) Committee's Power to Modify or Revoke: The committee is empowered to modify or revoke from time to time any final action previously taken by it pursuant to the provisions of this Section, any such modification or revocation, however, to be subject to the procedural requirements of this Article.



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STATE OF NORTH CAROLINA

STATE STREAM SANITATION COMMITTEE

STATE BOARD OF HEALTH

RALEIGH, NORTH CAROLINA

L E G A L N O T I C E

Notice is hereby given, pursuant to section 143-215, General Statutes of North Carolina, that a public hearing concerning pollution of the waters of the French Broad River Drainage Basin and the assignment of classifications to said waters will be held in the Assembly Room (Room 409), of the Buncombe County Courthouse, Asheville, North Carolina, beginning at 10:00 A. M., EST, Thursday, October 24, 1957.

The waters to be considered for classification during this hearing are those comprising that portion of the French Broad River Drainage Basin in North Carolina including the Davidson, Pigeon, Swannanoa, Ivy, South Toe, North Toe, Cane and Nolichucky Rivers and their tributaries lying within the State. These waters border on or flow through the Counties of Transylvania, Henderson, Buncombe, Haywood, Madison, Avery, Yancey and Mitchell.

All persons interested in the classification of the waters in the area are invited to attend and take part in the discussion. Persons desiring to be heard should give notice thereof in writing to the Committee on or before the date of the hearing. It is requested that, insofar as possible, any person desirous of offering lengthy comments and discussion in regard to the proposed classification of the streams, be prepared at the public hearing to offer a written statement to be included in the record of proceedings.

Additional information and copies of the proposed classifications are available in the office of the Division of Water Pollution Control, State Board of Health, Raleigh, and may be obtained upon request.

STATE STREAM SANITATION COMMITTEE

E. C. Hubbard

E. C. Hubbard, Secretary

PROCEEDINGS AT PUBLIC HEARING HELD IN

ASHEVILLE ON OCTOBER 24, 1957

Note: (The hearing, for the purpose of considering the proposed stream classifications for the French Broad River Basin, was called to order in the Assembly Room of the Buncombe County Courthouse at 10:00 A. M., with approximately 110 persons present, including the following members of the Committee: J. V. Whitfield, Chairman; Mrs. Karl Bishopric, Vice-Chairman; Scott B. Berkeley, Walter Clark, H. Grady Farthing, T. B. Upchurch, Jr., J. N. Vann, and B. C. Snow. Members of the staff present were: E. C. Hubbard, Secretary; W. E. Long, Jr., Chief, Pollution Control Section; W. E. Knight, Chemist; D. L. Coburn, Sanitary Engineer; and Mrs. Marjorie T. Carmichael, Recording Secretary).

Senator J. V. Whitfield, Chairman, State Stream Sanitation Committee, Wallace, North Carolina, Presiding: Ladies and gentlemen, it is indeed a pleasure for the State Stream Sanitation Committee to be here today. We have looked forward to the day when we could come here for the purpose of considering classifications for the waters of the French Broad and the Pigeon River Basins. The other mountain streams will be considered later.

Now if there is anybody here, representing either an industry or municipality, who is tense and concerned about what's going to happen to you - just relax. Nothing is going to happen to you. We haven't come here to destroy anything. We have come here to help you keep from destroying yourselves, and we are not going to be unreasonable. The only thing we are going to be is positive.

We want you to establish a time shcedule which you can keep and which will not be a hardship on anyone. Now, that doesn't mean that you aren't going to have to spend some money. We can't spend fifty years polluting our streams without having to spend some money to clean them up. However, there's no reason to be tense; no reason to think that your business, or your municipality is going to be told to provide waste treatment and do it immediately. We are going to expect you to do what is required, but you are going to be given a chance to establish a reasonable time schedule.

It is a pleasure, as I say, for us to be here. We have classified the waters in practically half of the major river basins in the State. We hope to be through classifying the waters of the major river basins and the minor river basins by 1961 or 1962. This business of cleaning up our streams is a highly important business, and there is nothing more important to the future progress of the State of North Carolina or to the United States than preserving our water resources. We realize that the job will take time. It takes us two years to study and classify the waters in a major river basin, because the classifications assigned must be right. We must be right because we must be fair to industries; we must be fair to municipalities and, above all, we must be fair to the people of North Carolina. The cooperation that we have received thus far has been heart-warming, and we are going right along and clean up the streams and put them in usable shape. Some of them, of course, are so polluted they can never be restored to pristine purity, but

we're going to make every stream in North Carolina usable. If water is not usable, it is of no value. Unfortunately, the water in some of our streams and rivers has become so polluted that it is not usable.

I want to say again, relax, and let's have a fine hearing. We want to hear everybody who wants to be heard, and after the streams are classified we will gladly work with each industry and municipality toward establishing a time table for pollution abatement that they can keep within reason.

I would now like to introduce our Committee: On my extreme left is Mayor Scott Berkeley of Goldsboro, who represents municipalities. Next is Mr. Walter Clark of Lincolnton, who represents industry; in this particular instance, mining. The next is the Vice-Chairman of our Committee, Mrs. Karl Bishopric, who represents industry, textiles; the next is Mr. J. N. Vann of Ahoskie, who represents municipalities; hext is Mr. Grady Farthing of Boone, who represents wildlife; next is Mr. T. B. Upchruch, Jr. of Raeford, who represents agriculture, and the ex officio member, Colonel B. C. Snow of the Water Resources Division of the Department of Conservation and Development. Mr. J. M. Jarrett, the other ex officio member, who is Director of the Division of Sanitary Engineering, State Department of Health, I'm sorry to say because of other responsibilities, couldn't be here today. He sends his regrets. I'm the other member of the Committee. I represent agriculture.

At this point, I am going to turn the meeting over to our Executive Secretary, Mr. Hubbard.

Mr. E. C. Hubbard, Secretary of the State Stream Sanitation Committee, Raleigh, North Carolina: Mr. Chairman, members of the Committee, ladies and gentlemen, there are certain procedures that must be adhered to in conducting our public hearings regardless of whether some of us may think they are necessary or not. They are specified by the requirements of the Statute and must be followed. There are certain aspects of the program that we wish to explain to you. Therefore, for the next thirty minutes, or more, you will be listening to me while I attempt to explain the requirements of the Statute, the policies of the Committee, and the purpose of the public hearing.

It is certainly a pleasure, as Senator Whitfield has stated, to be here and an even greater pleasure to see the fine group of people who have come here this morning to participate in the hearing. I would, therefore, like my opening remarks to reflect the appreciation of the Committee, as well as that of the staff for your interest. We certainly appreciate your assistance; we want your assistance; and certainly if any group ever needed assistance, this group does because, as Senator Whitfield has indicated, it's an important job; a job that we must do; and a job that we must do jointly and cooperatively.

The hearing has been scheduled specifically for the purpose of discussing the pollution studies that have been conducted on the French Broad River Basin and particularly to present to you suggested classifications for the waters of the French Broad River Basin. Those classifications, I am sure, will be of major interest to every person in the room.

As indicated in the legal notice, published in the papers in each county in the basin and sent to those persons listed on our mailing list, the waters that will be considered at this particular public hearing are those that comprise the French Broad River Basin. They include the Davidson, Pigeon, Swan-

nanoa, Ivy, South Toe, North Toe, Cane, and Nolichucky Rivers as the main tributaries, together with all of the small tributaries draining into them. The basin extends from over around Spruce Pine up to Brevard to include all the waters in the French Broad River Basin as shown on the map.

The waters flow through or are bounded by the Counties of Transylvania, Henderson, Buncombe, Haywood, Madison, Avery, Yancey, and Mitchell involving an area of 2,825 square miles, so that we have the waters of slightly over 10%, approximately 11 to 12%, of the entire State to be considered here this morning.

It will not be the purpose of this particular hearing to present information concerning the needed pollution abatement at any particular source of pollution. This type of information can only be determined after we have established the classifications that will be assigned, which classifications cannot be assigned until we have held the public hearing and the Committee has taken into consideration the factual data given in the report, copies of which most of you have, and also the information that is presented to the Committee by the public through this public hearing; therefore, it would be impossible to evaluate what should be done towards pollution abatement by the City of Asheville or by any municipality or industry in the basin.

A considerable amount of work has gone into the studies of the waters of the French Broad River Basin and the preparation of the report. As I mentioned, a copy of the report has been sent to all of the persons listed on our official mailing list, to those directly concerned with the pollution of the waters, and to all others who have requested copies of the report. We also have additional copies which may be obtained by writing our office at any time. They will be sent to you without cost as long as they last. We hope that those of you who have obtained copies have made a study of this report and particularly those portions dealing with the suggested classifications, and that you will be in a position this morning or during the day to give the Committee the advantage of your advice and your suggestions pertaining to the classifications that you wish to have assigned to the waters in your area. That does not mean necessarily that the Committee will assign every classification that may be requested through the public hearing, but certainly they do wish to obtain your recommendations because the Committee is trying to accomplish this task in cooperation with the public. They want to do with the waters of North Carolina what the public desires done with them. This is your hearing. It has been called for your benefit and although some of the members of the staff may take considerable time in presenting our findings and recommendations, it's your hearing and we want you to take full advantage of it and to feel free to make such comments as you desire. Furthermore, if you do not wish to give an oral statement during the hearing but would like to present information for the benefit of the Committee, you are entitled to submit a written brief anytime within thirty days after today and the written brief will be included as part of the hearing report and will be considered by the Committee in its deliberations in attempting to determine the appropriate classification for any particular stream.

Since you have been in the room, you have been given a blank form for your use in indicating your desire to be heard. Certainly, if you wish to be heard, or for that matter, if you do not wish to be heard, we would like to have you complete the form and either pass it up to me, or pass it to Mr. Coburn in the back of the room and he will send it up to the speaker's desk

so that you may be heard at the appropriate time. We do not want to miss the advice of any person here who would like to make a comment.

Now, in the interest of simplifying the procedure, we have elected to divide the hearing into three parts. The first part will consist of a brief discussion of the purpose of the hearing, and a brief review of the statutory requirements and policies of the Committee; while the second part will deal with a presentation of the factual data as contained in the report, not all of it, of course, because if we attempted to present in detail all the factual data collected during the study we would be here not one day but for the remainder of the week. The second part will be conducted by Mr. Long and Mr. Knight, who are familiar with the sources of pollution, their magnitude and the suggested classifications which will be presented as their part of the program. That will follow the completion of the remarks that I have to make. The third part will be devoted to hearing comments from you. All of you who have indicated you wish to be heard will be recognized, at which time you will be given an opportunity of stating your views in connection with either the factual data or the suggested classifications. There is one request that I must make to all who speak, and that is that they come to the front of the room and speak into the microphone. We are required by the Statute to record verbatim the comments that are offered. The only way that we can do that is to have the speakers come to the front and speak into the microphone so that their statements can be recorded. If you do not come to the front and speak into the microphone, it will be necessary for me to declare you out of order because we believe that what you have to say is important enough to be included as a part of the hearing record. I do not wish to embarrass anybody in that respect but we do want to record your comments since that is the only way the Committee can study your statement and arrive at conclusions that will represent the thinking of the entire group.

Now concerning policies, there are certain policies and procedures that the Committee must follow in carrying out the stream sanitation program. There are certain studies to be made, meetings and public hearings to be held, as well as certain other actions that must be taken before the program can be fully developed. The first requirement of the law with reference to the program states that the Committee shall develop and adopt a series of classifications together with water quality standards applicable to such classifications which will be appropriate for the purpose of classifying each of the waters in the State. This series of classifications and water quality standards was adopted after considerable study during the fall of 1953. These have been published and have been given wide distribution; however, we have copies with us and will be glad to furnish them to anyone who would like to have a copy at this time. If you will hold up your hand, a copy of the classifications and standards will be passed to you by Mr. Long. Please excuse this momentary interruption. These classifications and standards will be the subject of discussion later in the program and I thought that you would want a copy so that you may follow the speaker in connection with what he may have to say about them.

The second requirement of the program relates to the conduct of detail studies to determine sources of pollution and their magnitude, water uses, and the present quality of water flowing in the streams. This is obviously a time consuming task inasmuch as it is necessary to collect many samples from each of the sampling stations and such sampling stations are normally established above and below each source of pollution as well as at other selected points in order that the Committee may determine existing conditions

of the streams under consideration. Likewise, information concerning present and potential stream uses must be obtained to determine the proper classification to be assigned to that stream or a segment thereof so that it may be protected in such manner as to provide water of suitable quality to permit its continued usage for the purposes it must serve. This portion of the program in the French Broad River Basin has been completed and the findings of the study are contained in the French Broad River Basin Pollution Survey Report which has been issued and which most of you received.

The third portion of the program involves the holding of public hearings, such as this one we are holding today, during which the public is given the opportunity to express its views with reference to the classifications that should be assigned to the waters and finally the assignment of classifications which the Committee considers to be in the best interest of the public. The phrase "best interest of the public" is an important one. Some of the classifications assigned may not be in the best interest of each individual, but the Committee's responsibility is that of determining what classification is required to best serve the public interest, now and in the foreseeable future.

Next, I want to speak breifly about the classifications and standards, a copy of which you have just received. They are known as the rules and regulations pertaining to the classifications and water quality standards which have been adopted by the Committee. If you wish, you may follow me in a brief outline of the classifications that are available for assignment to the waters in the French Broad River Basin. There are six fresh water classifications. All of the waters of course in this area are fresh waters. We have salt waters in the eastern part of the State for which there is a separate set of classifications and standards that more nearly fit their usage than would fresh water classifications.

Briefly, the first classification is Class "A-I", which is applicable to waters serving as sources of public water supply where the only treatment provided is that of chlorination, or storage, or both. This type of water supply is exemplified by the Asheville water supply which is taken from an uninhabited protected watershed, stored and chlorinated and supplied to the public.

The second classification is Class "A-II", which is applicable to waters used as sources of public water supply where normal or conventional water treatment facilities are provided. These facilities provide chemical precipitation, sedimentation, filtration, and chlorination. This type of water-supply facilities is used at Hickory and Morganton where raw water is taken from the river and treated through conventional treatment plants before it is supplied to the public for consumption.

The third class is Class "B", which is applicable to waters used for bathing and other recreational purposes. The quality of water in this class must be maintained at a high level, particularly from the standpoint of bacterial pollution.

The fourth class is Class "C", which is applicable to waters that must be protected as a suitable habitat for fish and wildlife. Waters in this class do not have to be protected as carefully as waters used for bathing and

public water supply, but must be of such quality as to promote the propagation of fish and wildlife, not only so that fish and wildlife can survive but so that they will be a desirable environment for the propagation of fish and wildlife.

The fifth class is Class "D", which is applicable to waters serving as sources of water supply for agricultural purposes, including irrigation and livestock watering, and which will be satisfactory at the same time as sources of water supply for industrial cooling water or industrial process water after suitable treatment. We do not mean to imply by this statement that industrial processes do not require high quality water. In fact, some of our industrial processes require higher quality water than that which we must have in order to satisfy our needs for public consumption. The statement simply means that after satisfactory treatment, Class "D" waters should be suitable for most industrial processes.

The sixth class is Class "E", which is the lowest classification assigned and is applicable to waters used primarily for navigation and the disposal of sewage and industrial waste. If such waters are used for the disposal of sewage and industrial waste, this usage must not be to such an extent as to result in undesirable conditions as defined in the rules and regulations pertaining to water quality standards. I will not take the time to read the definition for "undesirable conditions" since it is rather long and is contained in the rules and regulations you have been given. In this connection, it should be noted that this classification will not be assigned to waters which, in the light of the considerations prescribed by the Statute, can be properly placed in a higher classification. It will only be used in those instances where a higher classification cannot be assigned.

Concerning the data contained in the French Broad River Report and how that was accumulated, I'd like to make the following statement: The French Broad River Basin Report contains data developed through actual laboratory studies of existing stream conditions. I think that some four or five months of actual laboratory studies in the French Broad River Basin were required to accumulate the data given. Also, field investigations were made of existing significant sources of pollution, and surveys of stream uses for public and industrial water supply, power production, agricultural purposes, bathing, fishing, and for sewage and industrial waste disposal. Each one of those facets was studied and the information obtained is included in the report. The data concerning existing stream uses for water supply, waste disposal, power production, etc., were obtained through our actual field studies, while information pertaining to the use of the various streams for bathing, recreation, agriculture, fishing, and other related uses was obtained through interviews with persons well acquainted with the area, such as County Health Officials, County Wildlife Protectors, County Farm Agents, and others who are interested in the water resource problem.

In studying the report, it should be borne in mind that the measurement of the effects of pollution discharges upon streams is made difficult by the varied characteristics of the different pollutants, the varying requirements of water quality for different uses, irregular stream flows, and the lack of simple devices and units available for pollution measurements. Please keep these factors in mind because they are the things that make difficult the measurement of the effects of pollution.

Concerning the effects of pollution, the quality of the stream water may be impaired in several different ways and I think this is rather important to you. (1) By pollution that increases bacterial loads such as domestic sewage; (2) by pollution that reduces the oxygen in the stream, such as sewage and organic industrial wastes; (3) by pollution that introduces solids or liquids that tend to either settle or float, thereby creating sludge banks or unsightly conditions; (4) by pollution that adds color, turbidity, acids, salts, or other objectionable characteristics to the water; and (5) by pollution of a definite toxic or poisonous nature. Any of these types of pollutants may interfere with or impair the quality of the stream for its needed and necessary uses. These pollutional effects may become apparent immediately below the point of discharge as in the case of floating solids and color, or they may not show up for several miles downstream. This makes the problem of judging the effects of waste discharges more difficult. Those that we can see immediately, we can judge. Those that may have their greatest effect five, ten, or fifteen miles downstream, require study to evaluate their effects on the receiving streams. Likewise, some of the pollutional effects persist for very short distances, whereas others may persist for distances up to a hundred miles. The seriousness of any pollution problem is also influenced by the uses of the receiving stream. For instance, a stream used as a source of public water supply would be more seriously affected by pollutants which would increase the bacterial content, than would streams used for agricultural purposes. In other words, the sewage pollution would create more of a hazard in a stream used as a source of public water supply or for bathing than it would if the same sewage is discharged into a stream used as an agricultural water supply. Likewise, a stream used for fish propagation would be more seriously affected by toxic or poisonous pollution than by pollution which would increase the hardness of the water.

Inasmuch as pollutants vary in their effect upon streams and since the amount of such pollutants permissible is governed to a large extent by stream usage, stream flows and other characteristics, such as velocity of flow, topography, water temperature, etc., it is logical that there would be no simple test which would indicate the presence and extent of pollution; hence, it is difficult to detect or evaluate pollution except through many analyses made over a considerable period of time and under conditions as near critical as possible. Operating schedules of industries sometime result in slugs of wastes at infrequest intervals which tend to further complicate the problem and make it more difficult to evaluate the seriousness of the pollution unless the sampling interval is frequent enough and sampling is carried on over a long enough period to catch the slugs of wastes. In other words, when we collect a sample of stream water and test it the results represent the condition of the water at the particular time the sample was collected. They do not represent, necessarily, the condition of the water an hour before or an hour after. Therefore, the sampling program has to be scheduled in such manner as to get enough samples to give us a representative picture of the condition of the stream.

In our discussion of the pollution in the French Broad River Basin which is to follow, we are necessarily limited in time; therefore, the description of existing pollution and its effects upon the streams can be given only in general terms. This discussion, however, is based upon the data collected by actual laboratory analyses and field studies. We feel, therefore, that the report represents an accurate picture of present stream conditions.

I'd like to say a word or two about stream flows since the problem of pollution abatement is also seriously affected by stream flows. The volume of water flowing in a stream receiving discharges of sewage or industrial wastes is a prime consideration in determining the amount of pollution a stream can carry without harmful effects and, therefore, greatly influences the pollution abatement needs. In other words, if we have a bountiful stream flow, we can take care of much more sewage or industrial waste discharged into it than if we have a small stream with very little flow. Also, the existing quality of the water into which the pollution is discharged, as well as the stream usage, must be given thorough consideration. In arriving at the allowable amount of pollution that can be safely discharged into a given stream, these together with other factors, such as flow regulation by dams, and we have some of that I believe in the French Broad River Basin, all will be given due consideration by the Committee before they establish the pollution abatement needs which will be the next step in the procedure following the assignment of classifications.

Under natural conditions stream flows will vary over a wide range. High flows usually occur during the winter and early spring months when temperatures are low. Dry weather or low flows ordinarily occur during the summer and fall months when high water temperatures prevail. We have dry years and we have wet years and the stream flow will vary accordingly, and there is nothing we can do about it at the present time. In view of this, we have to provide adequate corrective works for treating the sewage and wastes to such a degree as will protect the streams during the critical periods. When the pollution abatement plan is developed, it will be developed on the basis that the treatment prescribed or the treatment accepted, will protect the stream under critical conditions - not under heavy rainfall conditions or cold weather conditions, but under critical conditions of low flow and high temperatures, so that during periods of the year we will not have conditions that contravene the established standards.

The stream flow data, watershed areas, and stream mileages given in the report were furnished by the District Office of the U. S. Geological Survey under the terms of a cooperative program between the State Stream Sanitation Committee and the U. S. Geological Survey. The flow data recorded in the report represents the stream flows at the time the samples were collected and do not necessarily represent critical flows. Therefore, unless we happen to collect the samples during a critical flow period, the flows listed would not be the proper designed flows for use in determining waste treatment need.

As mentioned earlier, waters have many valid uses which in the interest of the public are reasonable and necessary. A point that we must all accept is that our streams have many valid uses which are reasonable and necessary in the interest of the public. These uses include: sources of water supply for public and industrial purposes; bathing and other recreational activities; propagation and maintenance of fish and other desirable aquatic life; agricultural irrigation and stock watering; navigation; power production; and the final disposal of municipal and industrial waste. In many instances, such uses may occur in the same stream section or body of water at the same time. These multiple uses must be reconciled so that one will not interfere with the other.

In considering the selection of recommended classifications and their applicable water standards, it was recognized that there is an apparent

conflict between the uses of water for sewage and industrial waste disposal and other present and potential stream uses, such as sources of water supply, etc. Yet, the final disposal of sewage and other wastes is a reasonable and necessary use because the stream is obviously the only practical method of getting rid of these wastes. So, we must accept the fact that we have to discharge our used waters into our surface streams. Therefore, the ultimate purpose of the stream sanitation program is to recognize this conflict in usage and try to reconcile the difference with respect thereto upon the basis of the facts obtained through the studies. In other words, we must provide treatment of wastes in such manner as to protect the water so that wastes may be discharged into the stream and still not interfere too seriously with the other normal and necessary uses of the stream.

Throughout the French Broad River Basin study, the preparation of the report, and the development of the recommended classifications for the waters in the basin a sincere effort has been made to follow the procedural requirements of the Act. The classifications proposed for each stream or body of water have been selected on the basis of the present and potential best usage, not on the basis of the condition of the water as it now is, but on the basis of the best usage in the interest of the public. The water may not meet the requirements for the best usage at the present time. If not, the problem will be to provide treatment of the waste, whether it be domestic or industrial waste, that is being discharged to the extent that the water quality standards will be improved so that the best usage may be protected.

The data concerning the present and potential future uses of the water for public and industrial water supply, and for sewage and industrial waste disposal were obtained through plant studies and from the files of the State Board of Health. Information pertaining to the uses of the various waters for bathing and recreation was obtained from the County Health Departments and the Division of State Parks of the State Department of Conservation and Development. Data on water use for fishing were furnished by the staff of the North Carolina Wildlife Resources Commission. The County Farm Agents were interviewed for data on stock watering and irrigation. Data concerning power generation were secured from the various power companies. Information concerning other related uses was determined through interviews with interested individuals and by field investigations.

We believe, therefore, that by obtaining information from the above-mentioned people we have a good index of the surface water uses in the area being considered during this particular basin hearing. It is quite possible, however, that some significant stream uses may have been overlooked. If so, we hope that these will be brought to the attention of the Committee during this hearing.

This concludes the first portion of the hearing and I hope these preliminary remarks have given you some insight as to the approach the Committee is following in connection with our stream sanitation program and also the type of program that the Committee is attempting to establish for the State of North Carolina. The next portion of the program will involve a detailed discussion of the factual data concerning sources of pollution and water uses by Mr. Long and Mr. Knight of the staff. Mr. Long is over here and Mr. Knight is at this end. By the use of the map on my right they will attempt to point out in general the suggested classifications listed in the report.

Now, as my final comment, I would like to re-emphasize the point that

this is your public hearing, that this is your opportunity to tell the Committee in person what the people in Western North Carolina want as a stream sanitation program for the French Broad River Basin. You can be assured that we shall appreciate your comments, that we want your comments, and that they are necessary in order for the Committee to serve you as it wishes to. At this time, Mr. Chairman, unless you have something else to add, the meeting will be turned over to Mr. Long.

Senator Whitfield: We have a treat in store for us. Of course, I don't mean Mr. Long's not going to give us a treat but we have an unusual treat for us today that we didn't know about until a few days ago. We have with us today a distinguished former Commissioner of Agriculture and distinguished former Governor and the present Junior United States Senator from North Carolina. Senator Scott did a whale of a job in assisting us in getting our State Stream Sanitation Law through the General Assembly. Now if I may, I would like to just take a minute to recall some of the things that happened in this water program. In 1945 Governor Cherry appointed a Study Commission to study pollution in the State, a Committee of 15 I believe. That Committee studied the problem and by 1947 we decided there wasn't any use to study anymore, the time had arrived if we were going to stop pollution to start, so I introduced a bill in the General Assembly for that purpose. Well you would have thought I was going to destroy the State. Even all my friends said, "Why Vivian, what in the world? Have you lost your mind? You ought to go over to Dix Hill and have your head examined". Of course, I couldn't even get the bill out of Committee. By 1949 this guy from Haw River had come on the scene and I introduced the bill again, had another battle but I almost got it through the House; it was defeated by eight votes. Then in 1951 I was faced with a lot of situations. In the first place, my candidate for the speakership lost. Anyway I had my bill introduced again but you know when a man loses his candidate for speakership he's not so popular for a while. Also folks were complaining to the General Assembly that I was a Scott man, saying that I went down the line with Governor Scott in 1949. I answered that I certainly did. I wanted to get out of the mud and a few other things. I always support the Governor of North Carolina that the people like. Of course, I didn't vote for him, being from Charlie Johnson's county. Out of all our conversation - the Governor may have forgotten this, so I'll say it to refresh his mind. Just to show you how popular I was, at the beginning of the 1951 General Assembly I heard that they were trying to get me to introduce the bill because I was so unpopular. I remember I was sitting in my seat in the General Assembly on the second day of the session and the page tapped me on the shoulder and said, "Mr. Whitfield, the Governor wants to see you". So, I got up and hot-footed it down to see the Governor, and about half way down to his office I got to thinking I'd better carry that bill along. Maybe he's afraid for me to introduce it. So, I did. When I got there the Governor was reared back with that red rose bud in his left lapel, and he had just lit a fresh cigar - a confident air, you know, preparing for the social amenities of the day. He says, "Vivian, do you know who the most unpopular man in the State is with this General Assembly?" I said, "Yes, Sir. That's easy." He said, "Who?" I said, "You are." He said, "That's right." "Now", he says, "Who is the next most unpopular man?" I said, "That's easy." And he said, "Who?" And I said, "I am". And he says, "That's right." I knew what was coming next so I pulled out my little bill, as they called it, and said, "There it is Governor. If you can get anybody else to introduce it, I'll help them just as much as I can behind the scene." And he said, "All right, let's try it." So, exactly

one week from that day the same page tapped me on the shoulder and said, "Mr. Whitfield, the Governor wants to see you." I knew what he wanted to see me about because I'd been hearing things. You know how rumors get around in the General Assembly. He hadn't been able to find anybody to introduce it. So, I went down. I had already concocted a plan which I thought might get the bill through. So, I went in to see the Governor. He had one of those frowns on that he wears when he is thinking. He had that red rose bud in his lapel, but instead of having a freshly lit cigar, he had a chew of Peach and Honey, enjoying himself very much. He said, "Vivian, I haven't been able to get anybody to introduce the bill. If you don't introduce it, it's no good". I said, "Governor, you know that's just soft soap. They don't want a bill anyhow, and they're just using an excuse." I said, "As unpopular as I am, you know they wouldn't say that if they thought I could do any good, but I've got a plan. With your approval, I'll sign the bill and if you want me to introduce it, I'll get Representative Clyde A. Shreve from the Piedmont to sign the bill and I'll get Roy Taylor from Buncombe County to sign it and we'll introduce it and then when we get up to explain the bill before the Committee, or Conservation and Development, I'll try to explain it and will have somebody to move that it be sent to a Subcommittee, not with the idea of killing it" - you know that's the old scheme, to send a bill to a Subcommittee to kill it - "but with the idea of seeing if we can't get a meeting of the minds." So we agreed on that policy and it worked. We got it through the House 98 to 14. We had a big battle in the Senate, but I won't take time to tell that story here, except to say that we got it through the Senate Committee by one vote, which is how close it came to being defeated. So that's the story briefly of the battle for the State of North Carolina and for you. The people didn't understand what we were trying to do. They thought we were going to destroy industry, were going to put municipalities in hock. I wanted to tell you about that because the Governor did a wonderful job in helping us get the law passed. I'd like to say this before I introduce him further. Last summer, a year ago, I was in his office on some forestry legislation, and as I went to leave he said, "Vivian, you look overworked and peaked", so he reached in his top desk drawer, and says, "Here's a plug of Peach and Honey, you need it," I told him him I didn't think I needed it but I'd take it along because I might think so later. Now, I want to report what happened to that plug of Peach and Honey that he gave me last spring a year ago in Washington. I put it in my pocket and about a week later my wife sent my clothes out to be pressed. When I came home she said, "When did you start chewing tobacco?" "Well," I said, "I haven't started yet." She said, "I took a plug out of your pocket this morning when I sent your clothes to the cleaners." "Well", I said, "Our Junior Senator gave me that, he thought I was a little peaked." Well, I decided to give it to Mose, our negro tenant. So, I called old Mose up the next time he came in the yard and I said, "Mose, what kind of tobacco do you chew?" He said, "I chews Red Coon, Captain." I said, "Did you ever hear of Peach and Honey?" He said, "Yes sir, I hear that's mighty good tobacco." So, I said, "I have a plug here. Now, this is a distinguished plug, too, a very famous plug. Senator Scott - you remember the man who was the Governor that started us on the road to getting us out of the mud." And he said, "Yes Sir, I remember him." And I said, "This is some of his tobacco. He gave it to me and I'm going to give it to you. He thought that I was a little sick and it would help me." He said, "Captain, listen here. If you'se never chawed tobacco, and I know you ain't, don't you start off with Peach and Honey, because I want to tell you one thing - that's powerful stuff and if you start of with Peach and Honey -- just one nibble -- after a few minutes, you won't know whether you'se riding on a muddy road or a hard surface."

Ladies and Gentlemen, I take great pleasure in introducing to you the Junior Senator, W. Kerr Scott.

Senator W. Kerr Scott - You notice I have some Peach and Honey up there on the desk and before this hearing is over, lots of you are going to have to be wormed out so I'm going to leave it here. I don't know just who needs it, and for what, but take advantage of it. If you don't use it all, there are one or two down stairs who have asked for what I have left, so there are plenty customers. I can tell you this. There's more spit in that tobacco than any I've been able to find so far.

I'm glad to have been given the opportunity of being with you today and I say that with all sincerity, because I never caught more political hell in North Carolina than I have around Asheville. You've trained me well. I've learned to take it, and so I'M going to shoot it right back to you today, because I'm going to talk about some of you; not by name maybe, but you'll know who it is because you have well trained me in how to take it.

As all of you on the committee know, my interest in water goes back a good many years. I know that all of you have been deeply interested in water for a long time. The progress that you have made has been very gratifying. When the committee was created by the General Assembly in 1951, I am sure a lot of people had the notion it would be just a paper operation. You, through a great deal of hard work and perseverance, have done an outstanding job and you have put into operation one of the State's most important agencies. I mean that sincerely. After many years of talking and thinking about it, we in North Carolina are finally coming to grip with water problems. The State Stream Sanitation Committee is carrying the load of a big part of the activity and is going on to conserve our water resources so that we may more fully utilize them. In the past few generations we have grown so fast that we haven't been able to keep up with our hoeing in respect to water conservation. We have been reaping the good from our streams without replenishing them or helping nature to recover the losses. The biggest mistake we have made has been the wide-spread abuse of our rivers and creeks through pollution. Industrial and municipal wastes have made a mess of many of our streams in this area. Due largely to the work of the State Stream Sanitation Committee, we are now making real progress. I understand that most of the industrial plants that have dumped wastes into the streams are cooperating with the program to control pollution. This is very encouraging and I am sure it will pay dividends to not only the individual industries involved but also to the entire State. Last year Congress recognized that the tremendous job of stream pollution was too much of a task for the State and local Governments to do by themselves. To assist in the problem, Congress passed the first really effective anti-pollution law in history. Under that law valuable financial assistance is given to the municipalities in controlling pollution. Last year alone, the first year in which the la w was in effect, North Carolina received well over a million and a quarter dollars. This money went directly to the municipalities to help build sewage treatment plants. With the new fiscal year less than half over, North Carolina's allocation, which is about the same as last year, is almost gone and there are already enough projects in the pipe line to more than exhaust it. It is the function of the State Stream Sanitation Committee to approve projects for assistance under the program, and I should like for you to know that the people in the Department of Health, Education and Welfare in

Washington, the Federal agency that administers this program, think that the Committee is doing a fine job in cooperating and working with them. That's in Washington.

Although Public Law 660 runs for only five years, it will generate for many years the expenditure of a great deal of money on the local level for the purpose of cleaning up our streams. Certainly, controlling pollution is right, and is at the top of things that must be done in establishing any successful overall water conservation program. This important job of the Stream Sanitation Committee is crucial. It is your job to decide how the most use can be made of water. In deciding how we are going to use our water, we ought to remember that our streams and rivers are for the use of all the people. It is your job to draw the fine lines of distinction and I am certain it becomes extremely difficult in many cases. Important as it is, cleaning up our streams is only a part of the overall water conservation program. The rapid growth we are enjoying has shoved our backs to the wall in our effort to have available the right amount of water at the right place at the right time. Many of our cities and towns, as well as farmers, have found that water cycles are too uncertain to depend on for a sufficiency of water throughout the year. More and more farmers are irrigating with sprinkling systems, and cities and towns are having to build lakes, and drill wells and tap streams to keep up with the demands for water. All this means that we need to go all out to impound and harness every drop of water we can find.

Recently I asked the U. S. Corps of Engineers to furnish me with some figures on the various water projects in North Carolina that are classified or under consideration. I put these together with the information I got from the Soil Conservation Service, the Public Health Service and other agencies, and I was surprised to find that it would take at least three hundred and fifty million dollars to pay for presently needed water projects in the State. I was talking to one of the bankers in Raleigh last week and I was surprised at his comment. He said three hundred and fifty million dollars won't do the job. Well, that may make your hair curl, but it's going to take something like that, or more. This is a lot of money, but an aggressive sound water development program in North Carolina would bring us dividends for many years to come. I am certain that a water program would bring just as many returns as the road program we embarked upon almost ten years ago. I want to repeat that. This program would bring just as many returns as the road program we embarked upon almost ten years ago. Now, you know in this particular area you folks didn't vote for the road program, and you may not be in favor of this. But, I don't see any need to just keep on butting your head against the wall like that ram did the other day, and, I think - well, I'd better not comment any more.

While you are considering the pollution problem throughout the State and particularly the French Broad River Basin at your meeting here in Asheville, I hope you will keep in mind that water is in every sense of the word our most precious resource in North Carolina. I want to repeat that. Water is our most precious resource in North Carolina. I really mean that. The way we handle our water problems will decide the extent we grow and develop and expand in both industry and agriculture for generations to come. In Western North Carolina, for example, as everywhere else, progress is directly connected with water. If the water problems of this area are properly handled, Western North Carolina will do wonders in expanding its already vigorous tourist business and in developing new industries. You know the tourist business is, according to people who keep up with that aspect of our economy, our second or third

largest industry, and I wouldn't be surprised if we properly handle the water in this State, especially in Western Carolina, that it won't some day be our second or first. If water problems of this area are properly handled, Western North Carolina will do wonders in expanding its already vigorous tourist business and in developing new industries. Tourists from all over the world love the scenery of this area, but we cannot expect to hold this attraction indefinitely with dirty rivers and creeks. Also, most types of industry need plentiful water supplies. Already the Great Smoky Mountains National Park is the most popular in the entire nation, and it has only scratched the surface in the way of bringing vacationers and sightseers to North Carolina. Unbelievable things can be expected in the tourist business in the coming years in Western Carolina. This whole area is on the threshold of a new era. Now, this morning I left Fontana to come down here. In fact, I left there early enough in order to eat breakfast in Asheville -- I couldn't find a restaurant open until I got down here.

Each year more and more people are coming to our mountains from the west, the vast Ohio Valley, Chicago, and the other populous areas of the middle west. When the new interstate highway along the Pigeon River is completed, it will mean that a new, year 'round, all-weather road will bring a heavy flow of traffic into North Carolina from the middle west. Another important factor will be the completion of the Blue Ridge Parkway. When this is done - at the present time the completion date is 1966 - it will mean greatly increased traffic can be handled from the Metropolitan areas of the north. Together the two highways will virtually put western North Carolina in the front yard of the nation's largest population center. When these highways are completed, many more thousands of people will be coming into this area. As the number of tourists increases, the water resources will be carrying heavier and heavier burdens. In addition to tourists, the manufacturing industries have been showing more and more interest in Western Carolina. As more plants come into this area, it will mean additional demands for water. The chain goes on and on, and one thing leads to another, and another. Yet water is the core of all of it. I wanted to come by and mention these things to you today and let you know of my continuing interest in the work you are doing. I am certain there are times when you think your job is a thankless one, but it is not. I am sure that all of those interested in water resources feel indebted to you.

I want to say this on behalf of any dairymen, or any farmers who are here today. I know from first hand experience what I am saying about this. Many of you remember Dr. Flowe, the State Veterinarian. He was posting a cow up here and got a cut on his hand some way and developed anthrax and died right up here at Asheville. Dr. Flowe was succeeded by Dr. William Moore.

When I was a lad, my grandfather used to make shoes and he tanned a good many hides, as well as our own. Those of you that have cows know that a tanning yard often overflows. The water from the tanning yard washed down to a stream that crossed my farm and anthrax developed in my herd from those spores. I want you to remember that spores live for at least fifty years. In other words, the way you control anthrax is by continuous vaccination. You probably also remember what happened over at Greensboro - I can't recall the man's name now - but he was forced out of the dairy business completely because of anthrax in his herd. I understand there are some tanneries on the French Broad River. There used to be one down at Old Fort, but that's been discontinued and I want to say that from the standpoint of farmers and for everybody that uses milk, anthrax, if it gets in the milk, it just kills the cow right quick. I

have seen them die in the stalls eating their feed. That's how vicious it is and how fast it kills. Of course, we vaccinated immediately and have to do that every year. It's required by the health authorities since it may affect your milk supply. We don't know how far it goes into the milk supply, where the human being can take it on.

Another thing I want to mention which I know first hand, is that when the Riegel Paper Company down near Wilmington was putting the mill in and when Mr.Riegel learned that the shrimp boys down at Southport were raising a howl about the wastes were going to kill their shrimp he took hold of the situation and removed the waste waters from the Cape Fear. You people who produce paper or have an interest in manufacturing it up here should go down there and see what Mr. Riegel is doing instead of trying to block the stream sanitation program as you have in the past. I'm on the upper region from Haw River, and by the way,my friends in Haw River have been fighting this Pollution Program. I don't know exactly what the situation is now, but they've been fighting just as some of you folks have up here and doing it politically. I know so well because I never could get the management in the area to be for me, but I could get the workers to be for me. So I just squared off with that. I broke even all right - a little better than even. I have had engineers, chemical engineers, to tell me, that there is enough sludge in Haw River itself for a man to make an extra good living by taking the sludge out and getting the chemicals out of it. We haven't got anything left but catfish. You know those chemicals killed all the fish, except the catfish which as you know are just sort of like a mule; they don't give a doggone about anything. They just live right on.

Those mill folks have been fighting the stream sanitation program all along right there in my county. In fact, you have to be a mighty good man to get elected in Alamance County, if you are against the textile mills in Alamance County or what they think of stream pollution. Same thing up here, but you gave me good training. I didn't realize it. I've learned how to combat it. I've survived so long.I'm like an Englishman, while I'm a Scotch-Irishman. I've fumbled through successfully more campaigns than I like to mention. I know some day, if you just keep on, you are going to get me, but I'm trying to ward it off just as long as I can. I'd like you to go down there to Riegel Paper Company. I guess we've got both Democrats and Republicans up here, but the interesting thing to me is, those folks are Republicans down there, came from New Jersey,and they are doing a better job of correction of stream pollution than you Democrats are up here. Now, Brandon Hodges, I know why you are up here - you're here to hear what I have to say. But I want you to keep that in mind now because you and I have been together on a good many things, and we've been against each other on a good many things. You have survived and I have survived so far. I hope you are going to keep on surviving, but I want you to give me a little chance to breathe too.

Down at the Riegel Paper Company when those shrimpers began to complain about what the mill waste was going to do to them, the company just got busy and checked the water that was coming down the river from up in our country, that we were polluting up there in the Haw River and all of the streams along the way, and they found that when they let it run through the mill, the water actually came out purer than when it went in. They just let their waste water run into a little pond out there. I don't know what the process is but you ought to go down there and see it. You never hear anything now from the shrimpers down at Southport. We haven't heard any complaints from anybody around there and it would be interesting to see how big a town has grown up around the mill - that little place, I believe they call it Acme.

The Riegel Paper Company has gone to processing. They are doing all kinds of things that they didn't think they could ever do. It's very interesting to see what they are doing. While I had the pleasure of being Governor, I had the chance to talk to them and I worked with them. They've worked with me and in fact, Brandon, I believe they will vote for me next time. Even if you folks up here don't, I think they'll do it. They've done a good job. I want to say that this water can be cleaned up because they have done it down there. You never heard a peep out of those folks, and I've forgotten what the estimated population of the village is. Vivian, do you know?

Senator Whitfield: The population is around 5,000.

Senator Scott: Just keeps growing you know. In fact, they can't find enough pines down there to build houses. Anyway, I'm just taking up your time here. I need to get on my way and I will appreciate it if you will let me go on as soon as this brief talk is finished. I am very happy to be here with you. I've known members of this Committee for many years and I want to say that you have a good Committee, a hard working Committee, and they've got a hard job ahead of them, but they will do as much good for North Carolina if they can work this thing out as was done with the road program. You will find out later on that I'm right on this particular thing. So with that, I'll say goodbye and get on because I've been up to Fontana Dam and while they were pretty reasonable with me up there, I'm going to have to sell another Eisenhower cow if I stay up here any longer. I won't have enough money to travel on. So I've got to get on back home. Please don't forget this medicine up here. Tommy, you might need some too. You are getting a little stout. Thanks to all of you. I'm glad to have seen you and I'll see you again.

Senator Whitfield: Now, ladies and gentlemen, we are going to get down to the business of considering the suggested classifications for the waters of this area. We enjoyed having the Senator with us and we appreciate his visit. Before we continue, we are going to give you just about a five minute recess to let you stand up and stretch your legs.

I have a letter from the Governor of North Carolina, Governor Hodges, in which he states: "I am very much interested in and impressed by the work done by our State Stream Sanitation Committee. Your public relations have been built on a difficult subject and the industries and local governments which are affected by your classifications, rulings, etc., have been unusually cooperative. The State will help in anyway it possibly can to see that our streams are cleaned up in an orderly fashion and that no undue hardships are encountered by municipalities and industry." - Signed Luther H. Hodges.

I also have a letter from the Governor of Tennessee that I'd like to read:

"Honorable J. V. Whitfield, Chairman
State Stream Sanitation Committee
North Carolina State Board of Health
Raleigh, North Carolina

"Through: Honorable Luther H. Hodges
Governor of North Carolina

"Dear Mr. Whitfield:

"I have been informed that the North Carolina State Stream Sanitation Committee will hold a public hearing in Asheville, North Carolina, on October 24, 1957, concerning pollution of the waters of the French Broad River Drainage Basin and the assignment of classifications of said waters.

"The State of Tennessee is vitally interested in the classification of these waters in so far as it affects the quality of the interstate waters of North Carolina and Tennessee. As you know pollution which originates in North Carolina reaches Tennessee in the Pigeon, French Broad and Nolichucky Rivers. This pollution seriously affects the use of the waters for present and potential uses by municipalities, industries, sportsmen and other citizens in that area.

"Your Committee and our Stream Pollution Control Board have worked together cooperatively on the various joint problem affecting our two States. We appreciate your interest and cooperation and we feel as you do that our States can and should work together to solve these problems. We, therefore, urgently request that your Committee consider the reasonable and necessary uses of water of these rivers by our Tennessee citizens because the maximum utilization of our water resources in the French Broad River Basin in Tennessee will depend upon the quality of water in these rivers.

"Our Stream Pollution Control Board plans to send a representative to Asheville to attend your hearing. He will present additional data on this problem for your consideration."

Yours very truly,

(signed) Frank G. Clement
Governor

We are very happy to have these two statements for the record. I also have a letter here from the Health Department of the State of Tennessee which will be put in the record. Mr. Hubbard, if you have nothing to say, at this point we will turn the meeting over to Mr. Long.

Mr. W. E. Long, Jr., Chief, Pollution Control Section, Division of Water Pollution Control, Raleigh, N. C.: Senator Whitfield, ladies and gentlemen. I hope you are very comfortable because I must warn you that this particular section is quite routine and long. I can only do things the Long way. We shall try to cover this portion as rapidly as possible. For the benefit of those who have a copy of the report with you and would like to follow me, I shall be glad to point out the pages in the report where these tentative classifications are given. We also wish to point out these recommended classifications in a visual sort of way, on these maps and charts. We realize that they are rather small and perhaps you will not be able to see all of the details, but we shall try to cover the recommended classifications for all the streams in this river basin, both visually on the chart and for those of you who wish to follow in the report, just as quickly as possible. In order to prevent as much repetition as possible, I shall try to cover whole areas at a time in which the same classification appears, so as not to repeat all of the stream names which may become monotonous. The Law requires that we spell out the suggested or recommended classifications, which are, as Mr. Hubbard explained to you, based on the best usage that is being made of the waters in the particular area at the present time or within the foreseeable future. Before I go into the classifications or report, I'd like for Mr. Knight to explain the chart and tell you about what these colored arrows mean and something about their relative size.

Mr. W. E. Knight, Chief Chemist, Pollution Control Section, Division of Water Pollution Control, Raleigh, N. C.:

The blue arrow with the cross hatch represents a point at which water is taken from a stream for an industrial water supply. The solid red arrows indicate the points at which domestic sewage or municipal pollution enters the stream. There are some instances in which there is some treated sewage in the area and in that case, the broken red arrow indicates the approximate strength or estimated strength of the sewage before treatment. The solid green arrows indicate the discharge of industrial waste into the stream. The green arrow with the cross hatch indicates the discharge of metal plating wastes into the stream. The streams are colored in accordance with the suggested classification to be assigned. The streams colored blue are suggested for classification as sources of water supply, either an A-I or an A-II. The orange color denotes a "B" classification with the best usage as bathing. The green color indicates a "C" classification for fishing, and the red color a "D" classification for agricultural uses, and the purple is used to denote an "E" classification for waste disposal.

Mr. Long: Thank you, Mr. Knight. Mr. Knight will point out these various areas on the map as we go along. If you would care to follow me in the report, we have divided this basin into three general areas. The first one will be the main stem of the French Broad River. The recommended classifications are given in Table 5, beginning on page 85 of the report. If you have your report handy and wish to follow me, please turn to Table 5, page 85. I'd like to call this statement to your attention. Any stream not named in Table 5 carries the same classification as the segment of the stream to which it is tributary. There may be some that are not named, but before I get through, I think you are going to pretty well agree that we've named at least enough of them. There are approximately 43 pages of these classifications in the main stem of the French Broad River. The white booklets giving the details regarding the stream classifications and the specifications have been distributed to you. On the bottom of page 85 is a summary of what these classifications mean. I'd like to review them briefly so you will have them in mind. "A-I" - Water supply from uninhabited watersheds requiring only approved disinfection. "A-II" - Water supply with approved complete treatment. "B" - Bathing and recreation. "C" - Fishing. "D" - Agricultural, including irrigation and livestock watering and industrial cooling and process water supply. "E" - Navigation and the disposal of sewage, industrial wastes or other wastes.

If you will please, turn now to page 86. We shall take the first segment of the French Broad River from the source to the mouth of Davidson River. The proposed classification for these waters is "C". In order not to repeat all of the streams that you see there is that first segment which have a "C" classification, I shall simply say that for the West Fork of the French Broad River and all of its tributaries we propose the tentative classification of "C". Without repeating all of those which are on pages 86 and 87, let's turn on to page 88. If there are any questions that you might have in order to clarify any of this, please don't hesitate to stop me and ask. I won't guarantee you an answer, but if I can't answer your question, I'll turn it over to Mr. Knight. But I think in the interest of time and repetition, it will not be necessary to read each one of these unless there is some question. All of the West Fork of the French Broad and its tributaries, as listed on pages 86, 87 and part of 88, are suggested for classification "C". We now come to the East Fork of

the French Broad River. There are two upper segments of the French Broad River and for the East Fork and all of its tributaries we suggest a class "C" classification with the following exceptions: If you will look at the bottom of page 88, No. 11, there is a tributary to East Fork River, Mountain Tea Branch - proposed for class "D" because the best usage in that area is for agriculture. The same is true for No.12, Buffeys Branch, Gerren Creek, and Joshua Branch. Best usage of those streams is for agricultural purposes so, therefore, the recommended classification is "D". East Fork of the French Broad River to Davidson River - we propose a classification of "D", with the exceptions as stated below.

I should mention if you are are not familiar with this manner of listing the streams, that the Roman numerals are the main segments of the main stem. Any tributary to that main segment of the main stem is given a capital letter. Any tributary to that capital letter is numbered 1, 2, 3, 4, and so on. Any tributary to those numbered is shown as a little a, a little b, or a little c.

The main stem of the French Broad to the Davidson River is "C" - the tributaries are "D" with the following exceptions: Letter H (1) on page 89, Morgan Mill Creek, we have a camp site which requires a "B" classification. All the rest on the page are "D", as you can see.

Page 90, Q, Carson Creek, bathing at Camp Gay Valley, a "B" classification. Batson Creek, bathing at a camp site, class "B". S, Rockbrook Camp Branch above the Lake used as a water supply for Camp Rockbrook, there we propose a classification of A-I. Rockbrook Camp Branch below the water supply for Camp Rockbrook, where swimming is carried on, a classification of "B". U, Camp Illahee Branch for bathing at Camp Illahee, classification is "B". V, Camp Deerwoode Branch, swimming best usage, classification of "B". Graham Creek, which is a tributary to Nicholson Creek, Class "B", bathing at Sega Lake. Keystone Camp Branch, above the water supply intake for Camp Keystone, A-1 Classification. Little c, Keystone Camp Branch, which is a tributary to Graham Creek, where bathing is the best usage, "B" Classification for Keystone Camp. Norton Creek above the Brevard water supply intake - Norton Creek is a tributary to Tucker Creek - we recommend an "A-I" Classification to protect the water supply for the Town of Brevard. Norton Creek below the water supply where bathing is the chief usage, we have a proposed classification of "B" for Transylvania Music Camp. Y, Cateechee Branch, bathing at Camp Cateechee, proposed classification "B". Z, King Creek above Brevard water supply we have an "A-I" proposed classification and also Fawn Branch A-I, water supply for the Town of Brevard.

Page 92, please. We have two other tributary streams, Mine Branch and Orchard Branch which supply the water for the Town of Brevard, and therefore we propose the classification of "A-I" for those. Lambo Creek above Camp Carolina Dam for swimming is proposed classification "B" at Camp Carolina. Allison Creek above the dam for swimming at Camp Straus, proposed classification of "B". This concludes the first segment of the French Broad River.

We are ready now for the second segment of the main stem of the French Broad from the Davidson River from the source to the mouth of Turkey Creek. That's a proposed A-II classification to protect the water supply of Ecusta Paper Company. Now all the tributaries to this segment have a proposed classification of "C", for fishing, with the exception of Turkey Creek. On the

bottom of page 93, we have Turkey Creek and we propose the "A-II" classification for the protection of the public water supply of Ecusta Paper Company.

Page 94 please. We come to the third segment of the French Broad. The Davidson River from the mouth of Turkey Creek to the mouth of Davidson River proposed classification of "E", waste disposal from Ecusta Paper Company. The fourth segment of the French Broad, from the mouth of Davidson River to the mouth of Boylston Creek, classification proposed is "E" for waste disposal of Ecusta Paper Company. For the tributaries to this fourth segment we've proposed the classification of "D", which is agricultural, with the following exceptions: D, Little River from the source to Power Dam, best usage is fishing so we propose the classification of "C" because that is a designated trout stream by the North Carolina Wildlife Resources Commission. Tributary to Little River are Steel Creek, South Prong of Little River, Mill Creek. They are proposed for classification "C", for fishing. Number 5, Piedmont Lake Branch, we have bathing at Elks Camp so we propose a classification of "B".

Page 95, 9 a, Glen Branch which is a tributary to Walker Creek, bathing at Camp Burges Gleen; therefore, we propose a classification of "B". 13, Reasonover Creek from source to Dam - we have bathing at Reasonover Lake - proposed classification is "B". Tributary to Reasonover Creek are Wildcat Branch and Puncheon Creek. Bathing is the best usage so we propose a classification of "B" for both Wildcat Branch and Puncheon Creek. Grassy Creek above Camp Sky Valley, that's number 15, bathing at Camp Sky Valley, so we propose a classification of "B" to protect that best usage.

Page 96 if you please. Eaglenest Branch - this is a tributary to Little River from Power Dam to the mouth. Eaglenest Branch has a best usage of bathing at Camp Eaglenest so we propose a classification of "B". Now page 97.

Colonel B. C. Snow, Member, State Stream Sanitation Committee, Raleigh, North Carolina: Camp Blue Star - Is that a typographical error? Should it be "B" instead of "D"?

Mr. Long: Glad you mentioned that Colonel. No sir, that is, I understand, an adult camp but it does not make any use of that stream. They just have it for arts and crafts so we do not need to have a higher classification there because they make no use of the stream whatsoever.

On page 97, if you will please. Now we come to Brightwater Branch which is a tributary to Shaw Creek, which is N 1. Best usage is for bathing for a Camp Site there, we've proposed a classification of "B". All the others are Class "D" so I didn't mention them in order to keep the repetition down. If there are no questions, we are ready to go to the fifth segment of the French Broad which is from the mouth of Bolyston Creek to the mouth of Ivy River, and we propose the classification of "D" for agricultural uses. All the tributaries, we propose the classification of "C" with the following exceptions: The first one is Bolyston Creek which is A., page 97, we propose the classification of "D" because the best usage is for agricultural purposes. All the rest of those on page 97 are in the National Forest, not polluted, we propose the classification of "C" which would be suitable for fishing.

Page 98, if you please. We have some exceptions there - 5, 6, 7, 8, 9, and 10 - Goldmine Branch, Betty Branch, Murray Branch, Crawford Branch, McKinney Branch, and Sweetwater Branch - best usage is for agriculture and we propose the classification for all those of "D". Now we come to another tributary to

this section, the North Fork of Mills River from source to Hendersonville water supply dam, we propose the classification of "A-I" in order to protect the water supply of Hendersonville. We also have some tributary streams that go into their watershed. They are Big Creek and its tributary, Bee Branch; Fletcher Creek, which has tributaries - Spencer Branch and Middle Fork. All those are in the uninhabited watershed area of the City of Hendersonville. We propose the classification of "A-I" to protect that water supply. The remainder on page 98 and page 99 are all tributaries to this segment which are all recommended for classification "C". We will not read them individually.

Over on page 100, if you please, we come to some other exceptions. No. 16, which is a tributary to Bradley Creek, and tributary to Bradley Creek are a, b, c, d, e, f, g, h, i, Drab Branch, Little Drab Branch, State Rock Creek, Yellow Gap Creek, Laurel Creek, House Branch and its tributary Long Branch, Thad Branch, Case Branch, and Hammett Branch, all drain into the watershed of the City of Hendersonville and we propose the classification of "A-I" to protect that water supply. Page 101, the tributary stream of Mud Creek, which is shown under F., we dropped the classification to "D" because the best usage is for agriculture. Also untreated waste from Hendersonville is discharged into that part of the stream. Tributary to Mud Creek is Little Mud Creek, which of course, is free of pollution - the best usage is Bathing, and we propose the classification of "B" in order to protect the bathing at Camp Kanuga, Camp Pinicale and Camp Teako. Also tributary stream of Greer Creek. We have bathing at Camp Tonawanda and propose the classification of "B". Murry Creek, which is a tributary of Greer Creek. Best usage for Murry Creek and its tributary Capps Branch, also Shepard Creek from Osceola Lake Dam to mouth - all three of those for agriculture so we propose the classification of "D" for each. Tributary to Shepard Creek - Perry Creek to Osceola Lake Dam, also its tributary Finley Creek, Tonys Creek and we have a tributary Wash Creek, are all used for bathing at Lake Osceola and we propose the classification of "B" for each. Tributary Johnson Drainage Ditch - agriculture is the best usage and we propose the classification of "D", and its tributary Bat Fork for "D", which stream also has the untreated waste from Chipman LaCrosse Hosiery Mill. Tributary to Bat Fork is King Creek from source to Highland Lake Dam - bathing at Camp Highland Lake, proposed classification is "B".

Page 102, please, Meminger Creek and King Creek from Highland Lake to the mouth; also its tributary Dye Branch, as well as Devils Fork, all for agricultural purposes and the classification of each is class "D". Tributary to Devils Fork is Camp Branch. We have bathing at a camp site and we propose the classification of "B" for Camp Branch. Other tributaries are Britton Creek, Cherry Creek, and Clear Creek, and all the other tributaries of Clear Creek, which go down through a, b, c, d, e, and Kyles Creek and its tributary, Lanning Mill Creek, we propose the classification of "D", because the best usage is for agriculture. For Henderson Creek - we have bathing at Camp Caryle - the proposed classification is "B". Harper Creek, bathing at camp site, the proposed classification is "B". Other tributary streams are Phillips Branch, Wolfpen Creek, Featherston Creek, Byers Creek, classification proposed is "D" because chief use is agriculture. Now we come to tributary stream, Cane Creek from source to Hwy. 25 and all its tributaries shown on page 103. We propose the classification of "A-II" to protect the water supply of Cranston Print Works.

Page 104, we have Cane Creek from Hwy. 25 to the mouth and all of its tributaries as Class "D" - agricultural usage. McDowell Creek, Class "D", Line Creek, Class "D", Avery Creek - bathing is the best usage at Camp Whippoorwill - proposed classification is "B".

Page 105, we have the following tributaries of Powell Creek, Clayton Creek, Ashley Branch, Orton Branch, Avery Creek and its tributary Spain Branch, Powell Creek, Ducker Creek, Clayton Creek, Ashley Branch, Orton Branch. The proposed classification is "D" because the best usage is for agriculture. Others are Class "C" as mentioned above. They are not exceptions; all these are the rule.

Page 106, please. AA tributary of Hominy Creek and its tributaries - proposed classification of "D" with the following exceptions: Most of these are "D" but we have a few exceptions. First is on page 107, Beaverdam Creek designated as a trout stream, so we propose the classification of "C" and its tributary Jesse Branch, Class "C". Another exception, number 11, Ragsdale Creek, fishing at Lake Ashnoca. BB, Moore Branch, an exception, agriculture being its best usage, we propose the classification of "D". We come to CC, the Swannanoa River from the source to the mouth and all of its tributaries. We propose the classification of "D" for agricultural purposes with the following exceptions: First one is Assembly Lake. We have bathing there in Assembly Lake. We propose the classification of "B". At Little Rattlesnake Branch and Big Rattlesnake Branch, we propose the classification of both as "A-I" in order to protect the water supply for Ridgecrest.

Page 108, if you please, Dunsmore Cove Branch and Flat Creek from source to mouth of Big Piney Branch, we have the proposed classification of "A-I", to protect the water supply for Black Mountain. Also tributary streams are Slaty Branch and Big Piney Branch - Flat Creek from source to mouth of Big Piney Branch and its tributaries Slaty Branch and Big Piney Branch, first four are on page 108, "A-I" to protect the water supply for Black Mountain. Next exception we have is number 9, Laurel Branch, bathing at Laurel Lake, proposed classification is "B". No. 10, Briar Branch, bathing classification of "B". Wolfpit Branch above YMCA camp, proposed water supply classification of "A-I" to protect the water supply at the YMCA camp. No. 11, Tomahawk Branch, bathing at Lake Tomahawk, proposed classification of "B", and No. 12, North Fork Swannanoa River above Asheville Reservoir and all of its tributaries, proposed classification of "A-I" which is on the uninhabited watershed of the City of Asheville. That takes up a goodly part of 109. All of these are A-I. Next is 13, Swannanoa River below Asheville water supply and all of its tributaries - we propose the classification of "D" - agricultural use with the following exceptions: First exception is Eden Creek, little d under 13, for bathing, proposed classification of "B".

Page 110, if you please. Tributary No. 17, Beetree Creek above Asheville water supply and all of its tributaries, we propose the classification of "A-I" to protect the uninhabited watershed of the City of Asheville. Beetree Creek below Beetree Reservoir and its tributaries - we propose the classification of "D". That takes up the rest of page 110 and the first 2 on page 111. Next exception would be Ross Creek, which is No. 24, page 111, bathing at Lake Kenilworth, we have the proposed classification of "B". Others are tributaries which have a classification of "D" on page 111, no exceptions there.

Page 112, if you please. Tributary, LL, Reems Creek above Hwy. 25, proposed classification of "C" because it's a designated trout stream for fishing. Tributary to Reems Creek, we have Sugar Camp Fork, which is for water

supply, proposed "A-I; Bee Branch, fishing, "C"; Laurel Fork above Woodfin Reservoir, proposed "A-I" for water supply; Laurel Fork below Woodfin Reservoir for bathing at Camp Sequoyah, proposed classification of "B"; Maney Branch, fishing, proposed class "C"; Ox Creek above the Reservoir for water supply, "A-I" is the proposed classification to protect the water supply for Weaverville. Other exceptions are Ox Creek below the Reservoir for fishing, proposed class "C"; Jimmy Branch, fishing, proposed class "C"; Mundy Cove Branch, for fishing, proposed class "C"; and Eller Cove Branch above the Reservoir, water supply for Weaverville, proposed classification "A-I"; Eller Cove Branch below the Reservoir for fishing, class "C". All of page 113 is regular, no exceptions there, all these are Class "D".

All of 114 is Class "D" except the last one. At the bottom of the page we come to Segment VI, French Broad River from mouth of Ivy River to the N.C.-Tennessee State Line.

Mr. Hubbard: Before you take that segment up it's been called to my attention that there is a great similarity on pages 104 and 105 between Avery Creek at the bottom of page 104, which is designated as K and Avery Creek again designated on page 105 as P. There seems to be a repetition there with a different designation and classification assigned. Avery Creek, K, on page 104, indicates bathing at Camp Whippoorwill; Avery Creek, again listed as Item P, page 105, indicates that the stream is used for agricultural purposes. Is that an error? It appears to be a duplication and would deserve checking before the final classifications are assigned. We will have to do that on a bigger map.

Mr. Long: Mr. Hubbard has pointed out there may possibly be a duplication of some of these streams. We can't check it on these little maps we have here. We'll have to go back to the quadrangle map to see if we have some streams that have the same names or not. I'm not familiar enough with this area to know. Quite frequently, we have more than one stream having the same name; therefore, this may be a case where we have separate streams with the same name or it may be a case of duplication. I have no way of checking it here, but we will check that. If it's a duplication, that part will be cut out. If they are additional streams, of course, it will stay like it is.

Page 114, please, Section VI., French Broad River from mouth of Ivy River to N. C. - Tennessee State Line, we propose the classification of "C" for fishing. We have almost as many exceptions as we have the rule - I hardly know how to save time here except I think I'll say it this way. Let me repeat so you won't get confused. French Broad River from mouth of Ivy River to N.C. - Tennessee State Line, we propose the classification of "C" for fishing. All the tributaries to this segment from Ivy River to the State Line, we propose the classification of "D", which is for agricultural uses with the following exceptions: First exception is on page 115, A. 1, Dillingham Creek, sometimes referred to as Big Ivy, from source to FFA Camp, where bathing is the best use, so we propose a classification of "B" to protect the water at Camp Tom Browne. Dillingham Creek, or you may know it as Big Ivy, from the FFA Camp to Barnardsville, we propose the classification of "C" for fishing because that is designated trout water from Barnardsville to 5 miles upstream. Tributaries to Dillingham Creek, or Big Ivy, are Walker Branch and its tributary Staire Branch; Corner Rock Creek, Little Andy Creek, all for fishing and the proposed classification is "C". Going on to Stony Creek, its tributary Carter Creek, that's "D",

tributary to Carter Creek is Water Fall Creek and its tributary, Bearwallow Creek, also Peach Orchard Creek, Sawmill Branch, Mineral Creek, its tributary Hawkbill Creek, we propose the classification of "C" for each. Mineral Creek is a designated trout stream. Page 116 -

Mr. B. C. Snow: Carter Creek is shown as fishing, class "D". Should not that be "C"?

Mr. Long: Yes sir, that's correct. Carter Creek for fishing, should be a "C". On page 115 - Under A 1 d (1) Carter Creek.

Page 116. All of these are "D" with the exception of No. 3, North Fork, best usage is fishing, proposed classification of "C" as designated trout stream. Two tributaries to North Fork, Ogle Branch and Straight Creek, proposed classification is "C" for both of those. The remainder of page 116 and page 117 are all regular,"D", so are all of page 118 and all of page 119.

Page 120. We have an exception under I.2., sounds like we are playing bingo but we are not. Hunter Creek above Water Supply Dam, we propose the classification of "A-I", to protect the water supply for the Town of Marshall. Another exception, on page 121, under K.2., North Fork, which is a tributary of Big Pine Creek, we propose the classification of "C" for fishing. Also tributaries Nos. 5, 6 and 7, Indian Camp Branch, Sugar Camp Branch, Puncheon Camp Branch, No. 9 Rector Branch, these 4 for fishing and the proposed classification is "C". The others are "D".

On page 122, tributary M., Doe Branch, and its two tributaries Sawmill Branch and Rocky Branch, and N., King Creek and its tributary Woolsey Branch, proposed classification "C". We come to Big Laurel Creek and its tributaries, proposed classification "C", because of designated trout stream. Big Laurel and all of its tributaries, we propose the Class "C" with the following exceptions: No. 1, North Fork above the water supply intake, we propose the classification of "A-I" to protect the water supply for the Town of Mars Hill. The remainder on page 122 are all "C"; all on page 123 are "C"; all on 124. At the bottom of page 125, another tributary, Pump Branch, and all of the other tributaries of this segment of the main stem, are proposed for a classification of "C" with the following exceptions: The first exception is on page 126. Tributary T, Cascade Branch, we propose the classification of "A-I" to protect the water supply for the Town of Hot Springs. All of the remainder on page 126 are "C"; all on 127 are "C" for fishing.

We come to page 128. We have the following exceptions on page 128. V., Spring Creek below the Reservoir Branch, an industrial water supply there, proposed classification of "D"; W., Trent Branch, for agriculture purposes, proposed class "D"; X., Flint Level Branch, agriculture, proposed class "D"; Blood River, proposed class "D"; Z., Jack Branch, proposed class "D" for agriculture purposes. That brings us through the main stem and the tributaries of the French Broad River.

Senator Whitfield: Mr. Long, just a moment please. How much longer will this part take? I want to know if we ought to go out to lunch. I expect we had better adjourn for lunch.

(The meeting adjourned for lunch at 12:20).

(The meeting reconvened at 1:40 p.m.)

Mr. Hubbard: Ladies and gentlemen, the Chairman has called the meeting to order again and before we continue with our presentation of the suggested classifications, we have one person here who has to leave because of another commitment; therefore, I would like to recognize him for any comments that he may wish to make. I'm speaking of Mr. Harry E. Buchanan, who is Co-chairman of the Industrial Committee of the Hendersonville Chamber of Commerce. Mr. Buchanan, we'd be glad to hear from you at this time.

Mr. Harry E. Buchanan, Co-chairman, Industrial Committee, Hendersonville Chamber of Commerce, Hendersonville, N. C.: Mr. Chairman, ladies and gentlemen, I appreciate the opportunity to be heard here at this time. We have an industry we are dickering with right now. We don't want to turn them loose, but we felt like we would like to say a few remarks here today. To begin with, the Hendersonville Chamber of Commerce is interested in the overall development of Hendersonville, Henderson County, Western North Carolina, and North Carolina. We believe in a balanced economy. We are just as interested in agriculture and the development of the tourist industry as we are in industry. But today I want to say to this Commission that we appreciate the orderly and the sane method that this Commission is using in approaching this problem of water conservation, that you are recognizing property rights, and that you do not intend to do anything to upset the economy of this State. We all recognize the need to provide more water in the future for humans, for agriculture, and for industry. Our cities and towns in Western North Carolina and probably in other sections of the State have been slow to face up to the problem of sewage disposal, but during the last Legislature, the 12 counties in the Western part of the State passed a bill to get the ball rolling for orderly planning for these cities, towns and counties in this 12-county area. Asheville is probably further advanced in the matter of planning than any of our other towns, and all of them are now realizing the necessity for orderly planning and are on the ball. We have today the know-how to control city sewage disposal, but industrial effluents and waste are another problem and must depend on a know-how of the chemists. Many industries in this region have spent millions on research but there's still much to learn about cleaning up industrial effluents and wastes that of necessity go into streams. We favor a balanced economy, as I said, and want to promote agriculture and the tourist industry, with ample fishing waters. At the same time, we need to secure new industry and encourage the expansion of existing industry in this region, in order to create jobs and keep at home the graduates of our colleges and technical schools that are leaving us today because we do not have enough industry. I hope that most of our streams can be cleaned up in 10 to 20 years and industry within 10 to 30, certainly, but we do not favor any program which will ask the impossible or the unreasonable of any existing industry or any that we may secure in the future. We thank this Commission in approaching this problem, as I say, in an orderly, safe and sane method, and we are willing to place the final disposition of it in your hands. Thank you.

Senator Whitfield: Thank you, Mr. Buchanan. Mr. Long, you and Mr. Knight will please proceed with your presentation.

Mr. Long: You will recall, this morning we went over the recommended

classifications for the main stem of the French Broad River and its tributaries. Now we propose to go over the recommended classifications for the Pigeon River Drainage Area of the French Broad River Basin. If you care to follow in the report, the recommended classifications are set forth in Table 10, which begins on page 168 of the report. Mr. Knight will point out these various areas on the map to assist you in knowing where they are. I shall mention the classification for a given area where that is all the same. We will not repeat each one to save time and avoid repetition. I will only point out the exception to the particular recommended classification for each specific area. If you have any questions, don't hesitate to stop me and we'll try to answer them for you.

Page 168, please. The first segment of the Pigeon River from its source to the Canton water supply intake, we propose the classification of "A-II" in order to protect this public water supply for the Town of Canton and for the Champion Paper and Fibre Company. For all of the tributaries in this first section, we propose the classification of "C" for fishing with the following exceptions: All of page 168 other than item No. 1, is "A-II"; the rest of them are "C". All of page 169, proposed classification of "C"; page 170, proposed classification of "C" and the first five on page 171. Tributary No. 12, on page 171, we find the first exception which is Long Branch; so is 13, Harley Branch; 14 Burnett Creek and its tributary Henderson Creek; Lencir Creek; Dix Creek and its tributary, Smoky Cove Branch; Poison Cove Branch; Stamey Cove Branch; Garden Creek and its two tributaries, Henson Cove Branch and Coffee Branch, all have a proposed classification of "D" because the best usage in that area is for agricultural purposes. So much for the first segment of the Pigeon. Are there any questions about that? If not, we will take the second segment of the Pigeon River from the Town of Canton water supply intake to Hwy. 25 Bridge. That little segment, we propose a classification of "B" because a great deal of bathing takes place in there.

Page 172, if you please. Segment No. III, Pigeon River from Hwy. 25 Bridge to the mouth of Crabtree Creek. We propose the classification of "E" because the best use of that stream, as we see it, is for waste disposal from Champion Paper and Fibre Company. Now all tributaries to this No. III segment, we propose the classification of "D" for agricultural purposes with the following exceptions: Long Branch, which is a tributary to Beaverdam Creek, we propose the classification of "B" to protect that stream for bathing at Camp High Valley. Rough Creek, which is a tributary also to Beaverdam Creek, we propose the classification of "A-I", to protect the water supply for the Town of Canton, F.; Connor Mill Branch, we propose the classification of "A-II", to protect the water supply for the Town of Clyde. H., Richland Creek from source to Lake Junaluska Dam, we propose the classification of "B" to protect Lake Junaluska for bathing purposes.

Page 173, if you please. Tributary No. 5, Hyatt Creek, we propose the classification of "B" to protect the bathing at Camp Alverno. Tributary No.6, Allen Creek from source to Waynesville water supply and all of its tributaries, we propose the classification of "A-I" as a water supply for Waynesville. We come to tributary No. 7. There's an exception, Allen Creek from Waynesville water intake to mouth, is a designated trout stream and we propose the classification of "C" to protect it for fishing. Tributary, Deep Gap Creek, a water supply there requires proposed classification "A-I". Old Bald Creek, Stecstachee Branch, Bearpen Branch, for fishing. The proposed classification for

these three is "C". Rocky Branch, "A-I for water supply. Cove Field Branch, proposed class "C" for fishing. Browning Branch with its tributaries Medford Branch and Camp Branch, and also Plott Creek, all these class "D" for agricultural usage.

Page 174, Eaglenest Creek, agricultural usage, proposed class "D". Farmer Branch, bathing, class "B"; Shingle Cove Branch, bathing, class "B". That's at Camp Laughing Owl. Shelton Branch, bathing, proposed class "B". Raccoon Creek, proposed class "B", bathing. Factor Branch for bathing, proposed class "B". Its two tributaries, Mauney Cove Branch and McElroy Branch, both for bathing; both class "B". Lake Junaluska, bathing is the best usage, a proposed classification of "B". Another tributary, Richland Creek from Lake Junaluska Dam to the mouth and all of its tributaries, we propose the classification of "D".

Now we come to the fourth segment of Pigeon River from the mouth of Crabtree Creek to the State line and all of its tributaries, we propose the classification of "D" in order to satisfy the required quality for our friends in the State of Tennessee, with the following exceptions: On page 175, we have the tributary stream E, Jonathans Creek, and its tributaries. We propose the classification of "C" because that is a designated trout strear. All of its tributaries on pages 176, 177, back in the D's again. Page 178, we have an exception down near the bottom of 178, U., Cataloochee Creek and its tributaries, we propose the classification of "C" for fishing. That's all on page 179, "C"; Page 180, "C"; now to page 181. All the tributaries to the Pigeon River from Hicks Branch, that's tributary Y there, to the State line, we propose the classification of "C". That takes care of the rest of pages 181, 182, and 183. That's the Pigeon River and its drainage area. Any question about any of that?

If not, then we will turn, if you please, to page 210 in your report, which is Table 15. We have the recommended classifications for the surface waters in the Nolichucky River Drainage Area which is a part of the French Broad River Basin. Roman Numeral I which is the first segment of the main stem - Nolichucky River from its source to the mouth. We propose the classification of "D", because the best usage is for agricultural purposes. Tributary to the Nolichucky is the North Toe from the source to Plum Tree Creek and all of its tributaries, and we propose the classification of "C". Most of those are designated as trout streams shown there on page 210. Page 211, same classification for those streams. Page 212, we have the North Toe River from Plumtree Creek to mouth and all its tributaries, proposed classification of "D" for agricultural purposes with the following exceptions: Tributary No. 6, Jones Creek, we propose the classification of "C" for fishing because that is a protected trout stream.

Page 213, 21. b, we have an exception, Crystal Falls Creek above water supply of Spruce Pine. We propose the classification of "A-I" in order to protect the public water supply for the Town of Spruce Pine. Tributary No. 22, Beaver Creek above water supply, we propose an "A-I" also for Spruce Pine water supply. Others are "D".

On page 214, tributary No. 27, Bear Creek, is a designated trout stream and we propose the classification of "C" to protect it for fishing purposes. Tributary No. 29, Crabtree Creek and its tributaries, we propose a classification of "C" for fishing purposes because these streams are designated trout

waters. Tributary No. 32, South Toe River from the source to Colbert Creek and its tributaries,we propose the classification of "C" for fishing as they are protected trout waters. The rest of page 214 is "C"; page 215, "C"; page 216, tributary No. 33, South Toe River from Colbert Creek to Browns Creek and its tributaries, we propose the classification of "B" for bathing at Carolina Hemlock Camp. That's South Toe River from Colbert Creek to Browns Creek and all of its tributaries, we propose the classification of "B" with the following exceptions: Tributary a, Colbert Creek is a designated trout stream and we propose a classification "C" for Colbert Creek for fishing purposes. Tributary No. 34, on page 217, South Toe River from Browns Creek to the mouth and its tributaries, we propose a classification of "D" to protect the agricultural usage with the following exceptions: On page 218, tributary No. 39 is an exception. Cane Creek is a designated trout stream and we propose a classification of "C" to protect the fishing. The rest of page 218 is all "D" and page 219 is "D". Page 220, tributary No. 44, Big Rock Creek, is a designated trout stream and we propose the classification of "C" to protect that stream for fishing. Tributary to Big Rock Creek is little k, Bean Creek. It's a fishing stream and we propose the classification of "C" to protect it for fishing. The remainder of those tributary streams are "D". On page 221, we have tributary 1, Little Rock Creek, a designated trout stream,and we propose the classification of "C" to protect it for fishing. Tributary No. 49, Pigeonroost Creek is a designated trout stream and we propose the classification of "C" to protect it for fishing.

Page 222, tributary Bearwallow Creek, Right Fork and its tributary, Leathermans Fork. These three are fishing streams and we propose the classification of "C" for each. Tributary C., Cane River from source to Power Dam and all its tributaries, we propose the classification of "C" to protect them for fishing because these are designated trout waters with the following exceptions: On page 223, tributary 8, Haney Creek and its tributary, Elk Fork; No. 9, Cattail Creek and its two tributaries, South Fork and North Fork; No. 10, Laurel Creek; 11, Burleson Branch; 12, Bee Branch; 13, Trudy Creek; best use of all of these streams is for agricultural purposes and we propose the classification of "D" for each. Tributary No. 14, Bowlens Creek above water supply dam, we propose the classification of "A-I" to protect the water supply for the Town of Burnsville. Tributary D., Cane River from Power Dam to mouth, we propose the classification of "C" for fishing. That is not a designated trout water, just plain fishing which requires a 4 parts per million dissolved oxygen concentration. Tributaries to Cane River from the Power Dam to mouth, we propose the classification of "D", as shown on the remainder of page 223 with the following exceptions: The first exception is on page 225. All of 224 you see is "D", about half of 225 is "D". We get down to tributary No. 18, Bald Mountain Creek is a designated trout stream and we propose the classification of "C" there to protect it for fishing. Also, No. 19, Little Creek, the same is true, proposed classification of "C" to protect that designated trout stream. And that, ladies and gentlemen, is it. If you have any questions, I would be happy to try to answer them.

Senator Whitfield: Well, ladies and gentlemen, in one sense of the word, that is it, and I wish it was it all the way. Our Committee has tried to do a conscientious job. May I remind you that we are your Committee; we are your servants; we have not come here to destroy one single industry or to make the role of the municipality hard. We have come here

to tell you the story and to invite you to sit down with us and our technical experts to draw up a program to meet the standards that we have outlined. Now, if we have given a standard that you think is too high for your industry or for your municipality, why you have 30 days in which to file your objections. The Committee will be glad to study your request and if we consider you are right and we are wrong, we will change our classifications. It may surprise you to know that in many instances we have been requested to raise the standards instead of lower them. Of course, we have never refused to raise a classification where there is sufficient justification. So if an industry or municipality wants a classification raised from "D" to "C" or "B", we are very happy to grant the request. We've also been very successful in showing the people, industries and municipalities that it is to their interest to do what we have asked them to do. You know, one of the strangest things in the world is that you and I will pay all kinds of taxes to build hardsurfaced roads. And, we build hardsurfaced roads regardless of the tax cost, but when it comes to protecting our water supplies, that's different. Oh, no, we don't want to spend a lot of money for that. And yet, no civilization has ever fallen because it didn't have hardsurfaced roads, yet the world histories repeatedly cite the civilizations that have fallen or decayed because of bad conservation of their water, the most precious resource, or one of the most precious resources we have.

Now we don't anticipate any trouble with you. What I mean by that is, we know that you're going to cooperate, that you are going to work out a time table with us, not for our sake, but for your sake. Now let's think over that. We have three kinds of water problems. First, we've got to protect our supply of water, which is why the Water Board was created in 1955. Second, our waters must be navigable. Our outer banks, our inlets are filling up, we've got to take steps to keep those inlets open and our streams open for navigation. The past General Assembly passed a law to help with that problem. Third, water must be clean and usable. What is water worth to you if you can't use it, if you pollute it so that you can't use it? Water must be usable, and when you destroy the usefulness of your water then your civilization is headed for the rocks. I mentioned those things to give you the whole picture. North Carolina has its water program, supply, navigableness and usefulness and that 's where the Stream Sanitation Committee comes in. We're sure we are going to get your cooperation and we're looking forward to helping you solve your problems. It isn't going to be easy. We had an instance in one river basin where a stream was so polluted that the industry would have to spend two million dollars and it would take five years to come up to the lowest classification, ceasing to be a nuisance. It was so polluted that it would take five years before it ceases to be a nuisance. Now we must be patient, we must be patient with that industry as long as they keep making progress. We're not going to make it impossible for them. The people of North Carolina must be patient and realize that you just can't press a button as I've said hundreds and thousands of times, and clean up the streams that you've been polluting for half a century. It takes time. When you have a stream that is sick it is like an individual, you can't cure it over night. We would be a very dangerous Committee if we would take an industry by the scruff of the neck literally and say now you clean up in thirty days, or sixty days or one year, or else. We would be destroying that industry. I know that in our history some laws have destroyed rather than protected. The law that destroys rather than protects is a dangerous law. We've had that in other countries, we've had that in our country. We had such a decision on May 17, 1954, a law that's going to destroy us if we don't handle it carefully.

Some of you have stated that you want to be heard. Before we begin to hear you on your statements or what ever you have to say, we have a distinguished author with us today and I'm going to ask our Vice Chairman, Mrs. Bishopric, to please introduce Mrs. Stokeley so that we may hear her comments.

Mrs. Karl Bishopric, Vice Chairman, State Stream Sanitation Committee, Spray, N. C.: Thank you so much much Mr. Whitfield. I asked this privilege because I have always wanted to do something for Buncombe County and the City of Asheville. I left here when I was about five years old and it is a pleasure to come back and breathe the same air that Wilma Stokeley does and be in the room with her and have the Committee with whom I work meet her. Some of you in Asheville who know her so well may not realize that Wilma Dykeman Stokeley has been here all morning. She has her husband, James Stokeley, and her mother, Mrs. Dykeman, with her. It is indeed a very, very happy privilege for the second time in my life to be able to introduce Wilma Dykeman Stokeley, who has written about this area of North Carolina and Tennessee. As all of you Asheville people know, she was born and reared here in Asheville. She has written a book on the French Broad which was published in the Rivers of America Series. I believe it is the most distinguished book of many that they have published and any of you who have not read it should certainly do so because it interprets you and me - ourselves to us, probably better than any other single piece of literature that we could read and it does it so painlessly, and such episodes that it's a light here through a window and one there and one there, and yet they are so related because she has done a magnificent job for her native State of North Carolina and her adopted State of Tennessee. She married a man from Tennessee of equal stature to herself in North Carolina. It is a great privilege to present Wilma Dykeman Stokeley.

Mrs. Wilma Dykeman Stokeley, Asheville, N.C., and Newport, Tenn.: I certainly hadn't realized when I came up here and filled out one of these little forms that I would have the honor to be introduced by a member of the Committeee. I feel almost upset by that glowing introduction, but as Mrs. Bishopric said, the French Broad Country is my country.

I have lived here all of my life except for a few years away at college and a few years away traveling. I've always lived in the French Broad region. In writing this book, I tried to visit most of the industries in the region and I was astounded and amazed and pleased at the ingenuity, at the resourcefulness, at the powerfulness of the industry in our region. I think I visited every hamlet and village and city, certainly, in the region and I love all the people of the region and I certainly like the nature of our region.

It seems to me, as was said this morning in one of the introductions, that the thing to remember in these hearings on pollution of the rivers is what must be done is that which will be best for the greatest number of people in our region and I'd like to say, Mr. Whitfield, that I'm appearing here not for the standards to be approved in any lowest but I would like to plead for the highest standards that can be achieved, both in the municipalities and in the industries and in the individuals. If we do not set high standards for ourselves in the little things and in the large things, it seems to me that our civilization is doomed just as have been others, including the mine civilization right here on our own continent - down in Mexico.

I'd like to read just a couple of pages from the chapter in my book called "Who Killed the French Broad?" and I would like to say that out of fifty rivers books written in this series by authors and about rivers in all sections of the United States, this is the only one that had a whole chapter devoted to this question, which is a burning question in the forty eight states of the Union, of pollution. In the reviews, two or three hundred reviews all over the United States, this chapter - much to my surprise - was mentioned more frequently, received more editorial comment, and resulted in more letters to me than all the other chapters combined; and I think that should make us pause because if we are to be a tourist region, if we are to be a living, growing region of our State and of our country, we must remember that people are vitally interested in this.

"In the early days of settlement one of the most heinous crimes a man could be guilty of was the littering or despoiling of another man's water supply - the spring or stream that fed him. Feuds or killings had a sort of unwritten approval when a man was defending a resource so vital to him and his family. But, odd as it seems, when the people began to cluster together in towns and cities and the despoiling became really large and ugly, it began to be overlooked. Villages and factories dumped their trash and turned their backs. Farther down the river people held their noses (and their tongues) and added their waste. And finally, part of the river was 'killed'.

"Water is a living thing; it is life itself. In it life began. And everything that lives in water requires oxygen. It is also a moving thing. A burden bearer, water can carry off great loads of humanity's leavings--but here the struggle between life and death begins. For it can carry only so much, and as the oxygen in the water is used up by waste, organic or inorganic, the living creatures in water begin to die. First, of course, go the higher types--until finally only the rat-tailed maggots and other such low pollutional forms are left--and then, nothing.

"Not only the life in the river suffers; there is all the life along it, all the network of creatures that live by water, including man himself. These, then, are the two aspects of dead waters: the life in, and the life along the river.

"More and more as droughts descend and populations increase and water becomes what it has never before been in this region--a valuable commodity because of its scarcity--people begin to realize the simple logic and necessity of 'washing our waters'.

"Pollution is an ugly word. A sick word. A dead one. And the French Broad is a beautiful river. But there is no help in ignoring sickness and merely hoping that it won't spread. There is no honesty or courage in denying death and hoping it won't be noticed, won't reach any farther. There is only one respectable course for a free citizen and that is to shoulder his share of the responsibility for the 'killing', for the pollution. Because, just as the river belongs to no one, it belongs to everyone--and everyone is held accountable for its health and condition. Some certainly more so than others, for as one national writer has observed, 'Where does the responsibility lie for cleaning up a river? The answer is plain and simple. Every city, every town, every industry is responsible for cleaning up the pollution it

creates.' And the least that those who are fortunate enough to be dwellers of the French Broad country can do, out of humble thankfulness for nature's bounty to them, is to make certain that their town, their city, and the industries around them at last shoulder these responsibilities.

"These dwellers can become familiar with facts rather than bogey tales, particularly the bogey tale that begins: 'We'd like to clear the river so you could see the rocks on the bottom of your river bed again, but we are afraid it would mean that you won't be feeling another kind of rocks in the bottom of your pants pocket'. This is a falsehood of inevitability. And it is time every individual shook himself from lethargy and probed for the truth obscured by that falsehood: the truth that filth is not inevitable. Pollution is not the price we have to pay for securing industries in our midst or for building great cities, or for living in civilization. We can have factories and we can have towns and we can have clean waters. Filth is the price we pay for apathy.

"Disposal plants and processes are expensive. They lack glamour. Their public appeal quotient is low. They cost cash, and taxpayers and stockholders must eat. But they must also drink. They must wash. And so, we are back at the beginning of the circle. Back to the purity of living water.

"A native wit once remarked, 'The Bible says that cleanliness is next to Godliness, but in parts of North Carolina it seems next to impossible'. This was certainly more humorous than accurate, we must believe. Cleanliness will not prove an impossible financial problem to cities that have withstood shattering depressions and regional upheavals and come through strong and growing. Cleanliness will not impose an impossible financial problem to industries that have overcome so formidable a burden as that of being forced to find a whole new raw material from which to manufacture their very product. The citizens of Knoxville who drink the water of the French Broad will not think it an impossibility to secure cleaner drinking water when many of them have worked on the project at Oak Ridge where man unraveled one of the deepest secrets of the universe and split the atom.

"Depressions would not have been overcome, the atom would never have given up its secret, shortages would never have been resolved, if the people involved had accepted their problem as insolvable, or at best capable of only long and involved study. It is not typical of the legendary American that he will accept any bad situation as inevitable. Why then, have we allowed ourselves to suppose the scum on our river is inevitable?

"There is one answer again: the apathy of each of us. Our cities are lagging, our industries are lagging because we lag.

"In a democracy, there is no stronger voice, no stronger regulator than the will of the people--simple people, fine people, clean people, filthy people--the people. And when we realize what our apathy is costing us, we will realize it is too expensive a luxury and exchange it for enlightened self-concern and public concern. We will realize that we had rather raise our own voices to cleanse our own evils than wait and let an emergency bring other pressures to bear upon us.

"Let the people's will, then, speak with a law saying that this killing of the French Broad must cease. A law for both of the states of the river affirming that each shall clean its portion of the river. A law requiring each agency--town or village, factory or plant--to come of social age now in the middle of the twentieth century and assume its responsibilities along with its rights. Such a law, fitted to the varying pollution problems of city or industrial waste, would give the cities a sense of unity, all fulfilling the same requirements for the same rules of decent citizenship, and it would give the industries a framework in which to present to their stockholders the reasons for a necessary expense. The request is just; if the terms are plain and firm /and established to preserve the life of the river and its people, there can be no avoiding such a law.

"For law has a certain poetry too. Law in its own purity, like the French Broad in its purity, has a logic and an inevitableness that dwarfs all dispute. A law is the logic of man, a river is the logic of nature: when the two are fused for the benefit of both, the result is one kind of beauty - a permanent beauty."

Senator Whitfield: Thank you very much Mrs. Stokeley. Before I let Mr. Hubbard take over, I'd like to say the specialists of the country, the technicians, can tell us that to clean up the streams of the United States, will require at present twelve billion dollars.

Mr. Hubbard: I have in my hand the forms that have been completed by about a dozen people indicating that they would like to be heard. I see that the first was completed by Mr. Frank Coxe, Vice-President of the Asheville Industrial Commission. I'd be glad to recognize Mr. Coxe if he's back in the room. Is Mr. Coxe in the room? I understood that he might be late so we will hear from him later. The next person I would like to recognize is Mr. Frank A. Watson, an Attorney from Spruce Pine, representing several mining interests in the Spruce Pine area. Mr. Watson, we would be gald to hear from you at this time.

Mr. Frank H. Watson, Attorney, Spruce Pine, North Carolina: Mr. Chairman, members of the Committee, Mr. Hubbard. In order to save as much time as possible, Mr. Chairman, I will deal primarily with the brief which we would like to file with the Committee, but first I would like to inform the Committee that I represent here today, several mining industries including the Hitchcock Corporation, Lawson-Boone Mica Company, Harris Clay Company, English Mica Company, The Feldspar Corporation, International Minerals, De-Weld Mica Corporation, Lawson United, Diamond Mica Company, Southern Mica Company, Hassett Mining Company, Mr. John DeBuse and Carolina Mica Company.

I would also like to add, Mr. Chairman, if I may, or rather preface my remarks with a statement that I am in much of a quandry as I have noted here today that the streams in which we are interested, primarily the North Toe and South Toe, have been classified as classification "D" and if our present practices are not in violation of the standards applicable to classification "D", of course I have no argument to make. I understand that oxygen wise we/have complied but due to the fact that silt and soil recently came under the jurisdiction of this Committee that there might be some question. If Mr. Hubbard would care to enlighten me now I'd be delighted to hear from him as to whether or not the present practices on the North and South Toe Rivers are in violation of the standards for class "D" waters.

Mr. Hubbard: I believe, Mr. Watson, that the amount of soil and silt that is being discharged into those rivers would result in deposits that would create conditions under which the quality of the stream water would be judged to be in contravention of the standards applicable to Class "D" streams.

Mr. Watson: Another stream in which we are interested is the small segment of Crabtree Creek, which is approximately five miles from its mouth, apparently about the point where Roaring Branch enters Crabtree Creek, from there on down to where the creek enters North Toe River. There are two mica plants on that creek and have been for a good many years. It, therefore, appears to us that the best usage of that creek has been for the mining industry. In the brief which the mining industries desire to submit at this time and in view of the statement just made by the Secretary of the Committee, Mr. Hubbard, we would desire to file a further brief within a thirty day period. This brief or argument is respectfully submitted in behalf of the mining industry in Western North Carolina and especially in behalf of the industries that would be affected by the classification by the Committee of the North Toe River and South Toe River and one or two tributaries in Mitchell, Avery and Yancey Counties. These industries directly affected can be confined to plants employing a froth flotation process for the recovery of feldspar, the dry ground mica industries operating what is commonly referred to as scrap or jig mica plants, and kaolin plants. The feldspar flotation plants and kaolin plants produce a considerable amount of scrap mica as a by-product. Also affected would be the wet grinding mica plants, but the problems of these plants would be more or less minor in nature as compared to the industries referred to above.

In an effort to present as true a picture as possible of the status and problems confronting the three said industries, the industries affected requested three of the outstanding men in their respective fields to submit statements to be incorporated in this brief. Mr. C. P. Rogers, Jr. is general manager of the Feldspar Corporation, operating plants in Mitchell and Yancey Counties, North Carolina, Erwin, Tennessee and the State of Georgia. Mr. S. W. Enloe, Jr. is Vice-President of The Harris Clay Company and he and his family have been closely associated with this industry for more than half a century. Mr. Fred Deneen is President and general manager of Deneen Mica Company, probably the largest producer of dry ground scrap mica in Western North Carolina. These gentlemen are acutely aware of the many problems and complexities associated with their respective businesses and pertinent to this cause. Their statements are submitted as follows:

First, The Use of the Waters of the North Toe River by the Flotation Feldspar Industry, By: C. P. Rogers, Jr. There are four of the largest feldspar plants in the United States located on the North Toe River between Spruce Pine and Kona, North Carolina, with an average investment in each of over one million dollars. These plants employ approximately 500 people who are residents of Mitchell and Yancey Counties.

These plants use an average of slightly over one million gallons of water per day, and the water after being used in the flotation process is duly returned to the North Toe River. The flotation process requires the addition of small amounts of fats, oils, and acids to the water but the amount in the case of each of these plants is almost negligible. To illustrate: While each of the plants use over 4,000 tons of water per day the total chemicals added to the water aggregate only about 800 lb., or less than 1/2 ton of chemicals

to over 4000 tons of water and the discharged water is actually sufficiently pure for human consumption.

In addition to the small amount of chemicals described above, the water when returned to the North Toe River contains approximately 4% solids and these solids are made up of clay and finely powdered granite. Both of these solids are beneficial as a soil conditioner and in fact a certain amount of finely ground granite dust is actually being marketed for this purpose by one company in Georgia.

Other than the above chemicals and solids all waters used by the flotation feldspar industry are fully returned to the North Toe River with no other differences than the water originally withdrawn from the North Toe River.

It is interesting to note that erosion from a 20 acre field subjected to a one inch rain would introduce more solids to the river than would the operation of one of the feldspar plants in the Spruce Pine district in the course of a months operation.

The flotation feldspar industry located on the North Toe River in Mitchell County is vitally concerned with the application of stream sanitation regulations, and submits that its operations create insufficient damage to the water course of the North Toe River and reservoirs located farther down that stream to warrant the Stream Sanitation Commission requiring any specific measures to be taken by the flotation feldspar industry in connection with waters the 4 plants on North Toe River return to said river.

It is particularly important to point out that the terrain through which the North Toe River flows is very precipitous making virtually impossible the construction of impounding dams or ponds to settle out the small amount of solids introduced into the water by the feldspar plants, and it would be economically impossible for the flotation feldspar industry to construct and operate adequate thickening machinery to handle the large volume of water and small percentage of solids since the cost of installations and operation of same would be astronomical.

The 4 flotation feldspar plants on the North Toe River in addition to being a major employer in the area bring in to North Carolina 2½ million dollars of new money through the sale of its products to other states, and the industry hopes that the Stream Sanitation Commission in setting up regulations concerning North Toe River's stream sanitation will permit the continued operation of the flotation feldspar plants in the manner they are now doing.

Next is a brief statement concerning <u>The Kaolin Industry</u>, By: S. W. Enloe, Jr.

Since 1888, The Harris Clay Company has been processing Clay. The only Primary Kaolin produced in the United States is produced in Mitchell County and Avery County of North Carolina.

The process is essentially the same as the one used originally except for the use of far more modern machinery and equipment. Since the process is one of water washing the Clay, there is quite naturally a lot of waste. In the process of washing Primary Kaolin the recovery of pure kaolin varies from 10% to 20%, along with a recovery of fine white muscovite mica of 3% to 7%. The Normal recovery of the two is around 20%.

The material left is composed mainly of white silica sand with some quartz and a small amount of mica with some Clay which we are unable to recover. The great majority of the sand, being heavy, settles out before it reaches the North Toe River. The material that actually reaches the river is milky color containing some Clay and fine mica, and is actually only a very small part of the waste we have.

The Harris Clay Company has two plants in Avery County, which at the present time are the only two plants being operated by the Company. These two plants represent an original investment of well over one million dollars, and are the only two plants of any size in Avery County. These two plants employ some 150 people the year round, with an annual payroll in excess of $450,000.00 and sales of over $1,000,000.00 yearly.

There is no other known way to process this Primary Kaolin other than the present method, as it must be water washed and must be free of impurities. Since no strong chemicals are used, we do not believe the refuse that goes into the river to be harmful. In fact, it is held to a minimum, but some must reach the river as a large volume of water is used in processing the Clay.

The Harris Clay Company has been operating in the Spruce Pine area since 1906, and has paid out millions of dollars in wages and royalties to the people of Mitchell, Avery and Yancey Counties, and with no other known way to process the Clay it could seriously curtail their operations if they were unable to turn their tailings in the river.

Next is a brief statement concerning Problems Confronting the Dry Ground Mica Industry in the Tri-County Area, in Waste Disposal, By: Fred Deneen.

The Dry Ground Mica Industry located in the Tri-Counties of Mitchell, Avery, and Yancey Counties of North Carolina supply approximately 60% of the world's supply of Dry Ground Mica. This product is shipped to every state in the Union and many foreign countries. Total gross sales amount to approximately two and one-half million dollars per annum. This production is used in the roofing, painting, plastic, oil well drilling, rubber and electronic industries.

The plant flow sheets in this area show the same separation process is used throughout. Mined ore containing approximately 10% recoverable mica is trucked to a central plant. Recoveryis by rod milling and water separation. Only in isolated cases are chemicals used.

A great many problems of the mica mining industry are parallel to other mineral industries located in this area. Namely, the rough terrain affording small area for settling basins of pools. The high price on the small amount of available flat land is also a great factor.

Amoug the chief problems that confront our industry are the large tonnages involved in producing scrap mica. It is the general condition in the mines of this area that the mica content runs 10% of the ore. Of the material mined 90% must be put to waste. Content of that waste material affords little chance of an economical separation of a by-product to offset the cost of a waste treatment plant. Mountains of waste material will necessarily be formed.

Thus increasing the cost of our products to the point that readily available substitutes will be able to replace our products. At that time this industry will be lost to North Carolina and her people.

For the reasons set forth in the preceding statements and because of other obvious factors the mining industries cannot survive if restrained from utilizing the subject streams for the use of water, waste and tailings, those streams being the South Toe, below the mouth of Browns Creek to the mouth of the river and from Plumtree to the mouth of North Toe River and with about five miles in the lower segment of Crabtree Creek. We are not inadvertent to the unsightly condition of these streams on occasion as compared to clear mountain streams abounding in fish. However, we are of the firm opinion economic interests of the public at large as well as those having financial interests in the various businesses warrant every reasonable concession by the Committee. This, coupled with the fact that the only people affected are the residents of these three small counties and no appreciable complaint has heretofore been made, would suggest we are at least entitled to "local Option". That was the feeling of the General Assembly in enacting G.S. 143-212 (3) (d), which has since been deleted at the request of the mining industry. You gentlemen will remember the mining industry like lots of other industries was a little bit skeptical when your bill was introduced and felt like it might be filled with goons and ghosts and three-legged beasts and things that go about in the night. It is interesting to note after these streams join and flow into the State of Tennessee the tailings are settled out at the Greenville, Tennessee dam and there the Federal Government receives royalties from the minerals recovered at the dam. Below the dam the water shows no appreciable effect of the discharge in the streams above the dam.

In the three rural counties of Mitchell, Avery and Yancey, the annual wages paid by these industries will exceed 2 million dollars. We have requested statements of annual wages paid by the various industries and although figures from all plants have not been received, we have had reported $1,980,811.58. These industries do not include many other mining industries such as the dry ground feldspar or the sheet mica and other industries. We have requested statements of annual wages paid by the various industries. In this area where the mountainous terrain prohibits extensive farming it is apparent the residents of the area would suffer an undue economic hardship if present practices by the industry were restrained. In addition to this would be the loss running into many millions of dollars suffered by those who have invested capital in these industries.

As has been pointed out in the statements heretofore submitted, the terrain of the area forbids the use of settling ponds or basins. The streams are virtually confined to steep gorges and the cost of any level or rolling land adjacent to the streams is probibitive.

In closing, the mining industry fully appreciates the many complex problems of the Committee relative to the industry and would like to advise those associated with the industry stand ready to assist and advise with the Committee in any respect and will appreciate the opportunity of cooperating with the Committee in a sincere effort to solve the pertinent problems.

Mr. Chairman, I would like to invite the attention of the Committee as to our problem to the first sentence of the Declaration of Policy set out in the Stream Sanitation Committee Act where it says "It is hereby declared to be the policy of the State that the water resources of the State shall be prudently utilized in the best interest of the people". Two other short statements under the Criteria for Assignment of Classifications "The character of the district bordering said water including any peculiar suitability such district may have or any dominant economic interest or development which has become established in relation to or by reason of any particular use ofsuch water; the uses which have been made, are being made, or may in the future be made, of such water for transportation, domestic consumption, industrial consumption, bathing, fishing, and fish culture, fire prevention, disposal of sewage, industrial waste and other waste and other uses; and the extent to which such water is already receiving sewage, industrial waste, or other waste as a result of present or past usage of the water, and the relative economic values involved in improving or attempting to improve the condition of such water". It is the feeling of the mining industry that in these three rough mountain counties, or the portions thereof, that are affected by the mining industry as pointed out heretofore today that it would certainly be to the best interest of the people of those three counties to allow these industries to continue. I will say again that if a concession is needed, we feel that the economic interest of those people - the people in those areas would certainly warrant some concession. We have no arguments to make with those areas or segments of the streams which have been pointed out here today on the Davidson and the Pigeon which have been classified in the classification "E", but we do feel that, temporarily at least, if such a classification is needed in the lower segment of the North Toe, Crabtree Creek, and South Toe River, that such would be warranted at this time in order that these industries may continue. Mr. Chairman, we have several men here from the mining industry that are available to answer any technical question you would like to be put to them and again I would like to thank you and the members of the Committee for allowing us to appear today.

Senator Whitfield: Thank you, Mr. Watson. Any member of the Committee like to ask Mr. Watson any questions?

Mr. Walter Clark, Member, State Stream Sanitation Committee, Lincolnton, North Carolina: Senator Whitfield, I have one question. He mentioned that the price of level or rolling land is prohibitive. Just for information, what is the price per acre on land of that type?

Mr. Watson: If such land were available, I'd say it would be far in excess of $1,000 per acre judging from one plant's past experience.

Mr. Scott B. Berkeley, Member, State Stream Sanitation Committee, Goldsboro, North Carolina: Mr. Watson, you suggested that we classify these streams affecting the counties in which your industries are situated, certainly for the time being in classification "E". Does that intimate that you all have some plan under which, maybe, the situation could be corrected?

Mr. Watson: We want to go along and cooperate with the Committee in any way possible toward working out our problems.

Mr. Berkeley: Mr. Chairman, the technical staff of the Committee and the Committee itself enjoy working out problems with folks and if we can work together on the solution of this problem that would be the way we like to handle such problems.

Senator Whitfield: Certainly, we have to work together on these problems. We have to try to find out what the problem is and then find a satisfactory solution. The State of Tennessee is also interested in these problems; therefore, we must also consider the problem from the standpoint of protecting the interests of Tennessee. Representatives from Tennessee are present and will make a statement later. We are certainly going to give everyone a chance to be heard on this problem. We are not here to destroy the mica industry or the feldspar industry. On the other hand, we must try to eliminate pollution in Tennessee. It is a real problem and it isn't going to be solved today or by next January, but it must eventually be solved. We may even have to call the Federal Government into the picture with the idea of seeing what solution they can offer.

Mr. Watson: Mr. Chairman, the mining industry does not desire to be immune to the Act, as I said a moment ago; it stands ready at all times to cooperate with your Committee. In answer to Mr. Clark's question, I'd like to invite his attention to something with which he is probably familiar - something that happened down here at Kings Mountain when they needed one or two acres and some lady wanted about ten thousand dollars an acre for it. If we had to have an acre of land and the land owner knew it, I'm afraid that the cost would be astronomical,

Mr. Clark: That is what I had in mind when I asked the question. I am familiar with the situation you mentioned.

Mrs. Bishopric: Mr. Chairman, may I ask Mr. Watson to introduce Mr. Carroll Rogers, Jr. and the other men for whom he spoke, if they are here. We'd especially like to meet Mr. Rogers, who is the son of a former member of this Committee.

Mr. Watson: These men were present this morning, but not all of them are here this afternoon since they had other commitments. Mr. Bruce Silvis of Harris Clay Company. If you gentlemen will, stand up please. Mr. Lee White of Harris Clay Company, Mr. C. P. Rogers, Jr. of Feldspar Corporation, Mr. L. L. McMurray of the Feldspar Corporation, Mr. Charles Hunter of International Minerals, Mr. Branch Lawson of Lawson United, Mr. W. H. Harrell, Jr. of the Hitchcock Corporation, Mr. Fred Deneen of Deneen Mica Corporation, Mr. Dewey Hall of International Minerals and Mr. C. P. Randolph, Attorney of Burnsville, who is also very familiar with all these problems.

Senator Whitfield: Thank you very much. Mr. Hubbard.

Mr. Hubbard: I would like to make a couple of comments in connection with Mr. Watson's statement. First, I would like to call attention to the fact that the section deleting the mining industry from the requirements of the Statute was not removed by the Legislature until the 1957 General Assembly. Our studies were completed in the river basin prior to that date; therefore, our group has not made a detail study of themining waste problem, and I think that certainly, Mr. Watson, you could expect our technical staff to go back into your area and work with you people in an effort to find out first what the problem is, and then, if possible, develop a practical solution to any problem that may exist. Second, you asked me a minute ago if we considered that this pollution might involve contravention of the standards applicable to Class "D" waters. I answered your question the best I could without knowing what stream or what mining operation was involved. I think that whether it does or not will depend upon further study to determine what effects the waste from any particular

mining operation may be having upon the stream. Once that is determined, then we can work with the industry, and I can assure you that is the approach we want to follow in finding a suitable and practical solution to any particular problem. There are many industries in the area and each one will present its own peculiar problem; therefore, I would like to assure you and this group that the State Stream Sanitation Committee and the Division of Water Pollution Control of the State Board of Health, which is responsible for doing the technical work for the Committee, will be interested in working with you people and will be in your area to more thoroughly study your particular problems. We have an indication here that Mr. Carroll P. Rogers, Jr., who is Vice-President of the Feldspar Corporation, and who incidentally was introduced by Mr. Watson a moment ago, would like to make a comment. Mr. Rogers, are you still of that desire?

Mr. Carroll P. Rogers, Jr., Vice-President, Feldspar Corporation, Spruce Pine, North Carolina: Thank you very much, sir, but Mr. Watson has read my statement and has covered the points I had intended to bring out myself so I won't take the time of the Committee to make a statement.

Mr. Hubbard: We are certainly glad to have you with us, Mr. Rogers. I would like to say that Mr. Carroll P. Rogers, Sr., was a member of the State Stream Sanitation Committee up until recently when he resigned, I believe, to retire. Is he retired or is he still working as hard as ever, Mr. Rogers?

Mr. Rogers: He says he is partially retired, but I think he is working about as hard as ever on many things.

Mr. Hubbard: We certainly appreciate your being here Mr. Rogers and also the rest of the gentlemen representing the mining industry. The next person whom I would like to recognize is Mr. Maurice Winger, Jr. Mr. Winger is Secretary to the American Enka Corporation at Enka, North Carolina, and has indicated that he would like to present a statement. Mr. Winger.

Mr. Maurice Winger, Jr., Secretary, American Enka Corporation, Enka, North Carolina: Mr. Chairman, members of the Committee, ladies and gentlemen. My remarks will be brief, and I hope to the point. At the outset, the statement should be made on behalf of the American Enka Corporation that our company has followed closely the progress of the Stream Sanitation Committee in the past several years and feels that a much deserved but seldom heard word of commendation is due to the members and staff of the Committee. The work is tedious, complicated, and unspectacular. I think we can all readily understand from today's proceedings that the progress that has been made is impressive, we feel, in both volume and quality. North Carolina can be proud that on a modest budget our State Committee has progressed faster in implementing our stream sanitation law than many other states. We understand that substantially greater results have been achieved here in the massive task of completing the classification of all the waters of this State than has been the case in New York, for example, under a law which is similar in many respects to our own comprehensive Statute on the subject.

Let us also make it clear at the outset that it is the desire and intention of the American Enka Corporation to cooperate fully with the Committee in its efforts to obtain for the State the maximum benefits from its extensive water resources. That is the purpose of our Statute to which we at Enka

heartily subscribe. While we wish to question whether the proposed classification of Hominy Creek is in accord with the statutory tests for best usage of these waters, this is a technical matter which we would prefer to deal with by written brief in the interest of saving time, and will not, in any event, alter or affect our efforts to cooperate.

We are now at work on a plan to make further improvements in the treatment of our industrial wastes generated at Enka. It will be our intention to discuss these plans in detail with the Committee and its staff at the proper time. Before going into the nature of these present plans, however, it should be pointed out that they represent only the latest developments in a long-range program that has been underway at Enka for many years.

We have been concerned about and working on projects for the improvement of stream conditions of Hominy Creek for some 20 years. One of the problems is acid recovery. It hasn't been licked completely but the progress that has been made is evident from the fact that in 1930 when Enka was getting into full initial production with the first unit of our present plant, acid waste amounted to almost a pound and a half (1.43 lbs.) for each pound of rayon produced. Since then a complex recovery system consisting of crystallizers and evaporators that have cost a total of over $800,000 has reduced acid waste to 0.1 pound per pound of rayon or a reduction of 93 per cent. As a result, although our total production of rayon last year was some nine times greater in amount, the total acid waste resulting was substantially less than in the early 1930's.

Similar progress has been made in other areas. A caustic soda recovery system which is valued at some $350,000 has been equally impressive in reducing this type of waste. During the years 1949 and 1950, three settling basins were constructed at our plant at a cost of about $125,000 in an effort to make further improvements in the character of our effluent. This settling basin system has accomplished the removal of 90 per cent of the solid material from the waste water which is now treated in this fashion, so that this problem seems to us to have been adequately provided for.

Last year Enka completed the installation of an entirely new type of boiler for its power plant at a cost of nearly $1,000,000. It is the first of its kind installed in the South by Babcock and Wilcox. One feature of this mammoth piece of equipment is a system designed to permit the reduction and recovery of fly ash now going into Hominy Creek. This was an important factor in Enka's selection of this type of boiler even though the cost of the boiler itself was many thousands of dollars more than the ordinary type without facilities for such a recovery system.

This year the Company has completed the installation in Hominy Creek of a pH recording device which makes a permanent record of the degree of acidity or alkalinity in the water below the plant. This will permit an accurate analysis of the circumstances causing any fluctuation in the pH reading and thus assist us in our efforts to stabilize this condition by means of internal controls over manufacturing operations which we are presently working on.

This leads me to the four-point plan for further improvement which Enka is prepared to undertake if the Committee approves. It is a five-year plan which is in keeping with the constant efforts and continuous progress Enka hopes to make in dealing with this problem.

First, in 1958, we propose to complete and put into operation at an estimated additional cost of $15,000 the fly ash recovery system which we have commenced.

Second, we have studied several alternative plans for pre-mixing, neutralizing and dispersing our waste waters before they enter the stream. All of these plans would involve substantial expenditures and should, therefore, be further studied and tested before any one plan is selected for final installation. To conduct this further study and testing program, Enka is now engaged in planning and installation of a pilot plant to be used in experimental mixing and treating of acid wastes for the purpose of better stabilizing and neutralizing this condition. It is proposed that the second point in our plan be the completion of this pilot plant facility and its experimental operation during the years 1958 and 1959 at an estimated cost, we think, of about $20,000.

Third, based on the results obtained from this pilot plant operation in conjunction with our new pH recorder, and after consultation with the Committee and its staff, it would be our intention during 1960 and 1961 to design a full-scale system of the type which our pilot plant operations indicate will do the best and most economical job as a finish treatment. This third point in our program may cost as much as $100,000 or more, depending on the final plan adopted.

Fourth, concurrently during the years of 1958 to 1963, Enka proposes to continue research efforts directed toward finding practical ways of improving its acid recovery system by at least another 50 per cent which we think will permit substantially complete neutralization of acid waste before entering the stream.

We would expect that this four-point, five-year program will accomplish the effective abatement of any remaining problem arising from our use of the waters of Hominy Creek. It should be noted, however, that Enka is not and never has been the major contributor to the pollution of the French Broad River. As Table 3 of the Committee's own survey report indicates, the problem of the City of Asheville as well as the Swannanoa water and sewer district is considerably greater than ours to mention only two. No real improvement in the conditions of the French Broad River may be expected until the problems of these and other contributors to the present situation can be solved or the conditions at least improved.

This is not to say that a start must not be made somewhere. Enka made its start many years ago. Raw sewage in Hominy Creek is substantially less of a problem after passing through the Enka plant than it is before it reaches the plant. Because of lack of sewage disposal facilities, Hominy Creek water is far from pure when it reaches Enka, as the Committee's survey demonstrates in the table showing that coliform bacteria count is considerably higher in the waters of the creek above Enka than it is immediately below the plant. Sewage treatment facilities are particularly needed throughout the area. They will cost money and, no doubt, encounter much opposition. In the meantime, Enka is willing and prepared to continue to spend money to do its share in solving this problem, but it's going to take the combined efforts of many to show real improvement over the long range. Leave is requested to file a written statement or brief setting forth the Company's position in full with respect to the contents of the Committee's report and the proposed classifications. Thank you very much.

Senator Whitfield: We realize that, Mr. Winger. That's why we are very happy that everybody is willing to cooperate in solving this problem. It's one that's going to take time, and one that is going to be solved. Mr. Hubbard.

Mr. Winger: Thank you, sir. We will want to confer with you soon.

Mr. Hubbard: Thank you very much, Mr. Winger. It seems that you have formulated a plan and are getting the program underway. We appreciate your efforts a lot and if our staff can be of any help to you at any time, I hope you will let us know. Has Mr. Coxe come back in the room yet? Mr. Coxe, we called on you earlier but you weren't here so we waited until now. Ladies and gentlemen, I would like to introduce Mr. Frank Coxe, Vice-President of the Asheville Industrial Commission, Asheville, North Carolina. Mr. Coxe.

Mr. Frank Coxe, Vice-President, Asheville Industrial Council, Asheville, North Carolina: Thank you, Mr. Hubbard. I apologize for not being here. I had a long distance telephone call. Mr. Chairman, ladies and gentlemen of the Committee, when I signed a card asking for a few moments, I had no idea I'd be making anything in the form of an address to be recorded.

My particular work, which is the work of the Asheville Industrial Council, involves the promotion of new industry in this particular area. Of course, tied in every day with every prospect is the question of water and we are in great sympathy with the work that the Committee is doing. Practically every prospect we have asks questions right at the beginning about our water situation, our water supply. Of course, we have to be able to supply their needs or we don't have a chance to get them here. At the same time, they also have to do something with that water which means the disposal problem or the pollution problem, and the only reason that I wanted to say anything was that I think that there is no lack of appreciation on the part of anyone as to the vital need that we have for industry in this area. What I'm saying is that anything that we might do, any action we might take which would seem antagonistic toward industry is going to hurt us badly, and that is not only toward those we've already got, but also those that we are trying to get. Those who are on this same work in the Department of Conservation at Raleigh, for instance, and other communities around the State, are fully aware of that and I'm sure the members of the Committee are.

I just want to give you a couple of figures to show you what industry does mean to this area in case there's anyone who doesn't realize its significance. In our 19 Western North Carolina counties, we have 69,907 employees in manufacturing enterprises, 660 manufacturing plants with an annual payroll of over $240,000,000. You can see what it would mean not to have some of these and not to have the hope of getting more. In Buncombe County, specifically, we have approximately 12,250 employees in manufacturing. The annual payroll in this county, and I'm speaking only of payroll not of other things in the way of expenditures and so on, is over $43,000,000 a year. So, we would be in very bad shape if we did anything to hurt that particular situation. Many of the counties in Western North Carolina are losing population. That's particularly true of those west of the Balsam range in the area where TVA has developed our hydroelectric power, of which 93% is being sent over in East Tennessee. There's been very little industrial development in that area. Actually, in Western North Carolina the counties which have shown the greatest growth are, of course, the counties with industrial development. So, I simply wanted to make the point that we can't go to any extremes as regards our

attitude toward industry in so far as creating any kind of an atmosphere which would lead any industry to think they are unwelcome. I know that this Committee has that in mind and it is kept carefully before them all the time, but I also know that we have extremists everywhere and these figures and this statement are as much for our own public as for the members of the Committee. I appreciate this opportunity, Mr. Chairman, of saying a few words.

Senator Whitfield: Thank you Mr. Coxe. Would anyone like to ask Mr. Coxe a question?

Mr. Hubbard: Thank you Mr. Coxe for your timely comments. The next person whom I would like to introduce is Mr. Phillip C. Brownell, General Manager of the Ecusta Paper Division of the Olin-Mathieson Chemical Corp. Mr. Brownell, we will be glad to hear from you.

Mr. Phillip C. Brownell, General Manager, Ecusta Paper Division, Olin-Mathieson Chemical Corp., Pisgah Forest, N. C.: Mr. Chairman, members of the Committee, the name of my division and my company is rather a mouthfull to say so I will repeat it, not to take up time but because I am speaking on behalf of the Olin Mathieson Chemical Corporation, which has two operating divisions here in Western North Carolina on the French Broad River. One manufactures paper which is known to many of you by the name of the original company, Ecusta Paper Company, which is now a division. The other is the Cellophane Manufacturing Operation, and both are side by side. We are deeply concerned with the problems to which this meeting is devoted. We realize that this meeting cannot afford to devote the time that we could devote talking extensively about our situation; therefore, we, of course, expect to file with you a written statement which will much more fully state our position, our problems, and our hopes in connection with this subject.

First, let me make clear our Company's attitude and policy with regard to this subject. I'm sure we will all agree that time has long since passed when either cities or industries say, "Leave us alone. We have no problem." We support the objectives of the State law which this Committee administers. We want and we intend to do anything that is feasible and in accordance with the law as our share in advancing this program. We will continue to work, and I emphasize continue, to find solutions for the complex technical problems which face us in our operations, solutions which must, however, permit us to continue to operate as a sound enterprise contributing to the economic welfare of this area. We understand the difficult task that this Committee has to perform and which it has undertaken, we feel, with competence and diligence. We have confidence that the Committee, in turn, will understand our difficult problems in this field, and that we can work together very cooperatively.

Let me now make a very few observations about this matter of the complexity of the stream pollution abatement problem in general. It is extremely difficult to explain -- let alone solve -- some of the technical problems presented in disposing of some of the wastes inevitably generated by various industrial processes. All of us know that a big part of the total problem of stream pollution comes from the so-called "domestic wastes" of towns and cities -- wastes, of course, inevitable and to which every one of us contributes, but at least the technical methods of treating municipal wastes are known. The problem of doing something about municipal domestic wastes is, therefore, largely a financial problem.

In many industries such as ours, however, the technical means for solving some of the problems without destroying the industry which creates the problems, simply are not known. The solutions or partial solutions which may fit one case, do not fit another. However, just because the problems are difficult, I do not mean at all that we have not worked on them, and that we will not continually work on them until we find answers which will meet the kind of reasonable, rational standards which carry out the policy of this law and that this Committee is seeking to find.

Now let me say a few words about the nature of the wastes from our manufacturing processes in our own two operations. There are many different kinds of waste that are generated by industrial processes as complex as ours. One of the things, perhaps, that is not generally known is that in many, many instances, the waste problems have been solved. We have solved them in our own case, in many situations, but our principal and hardest remaining problem arises from the waste water generated in our paper manufacturing plant. There, and I'm over-simplifying of course, we cook flax straw to separate the nonfibrous part of the straw from the fibre. This process requires large quantities of water, and the nonfibrous part of the straw is dissolved in the water. This dissolved vegetable matter is what uses up oxygen in the river by natural processes. This use of oxygen constitutes the problem, the degree of which depends on the volume of water in the stream and the length of time it takes the stream to recover its normal oxygen content through natural aeration. I mentioned this, not to get into complexities, but because I would like to point this out.

Technical people measure this oxygen demand of various kinds of waste by a standard they call "population equivalent". Measured by that standard, which is the one very properly used in this report, our waste water has a high oxygen demand and thus a high so-called "population equivalent". For those of us like myself, however, who are non-technical, I think it really is important to understand that this does not mean that the waste is like sewage from a city which contains unhealthful bacteria. We are not fond of our waste water, but the fact is that the dissolved vegetable matter in the water from our plants is not unhealthful; it is sterile, non-toxic, and devoid of bacteria. We only wish that our waste-treatment problem were as simple, from a technical standpoint, as the domestic-sewage treatment problem.

Now, finally, I do want to make another point also, by over-simplification, and that is that we already have done a great many things and have spent a great deal of money in connection with this problem. Where there are known, technically feasible methods of pollution abatement, we have adopted them, often at considerable expense. A list of those would not only bore you, but would be probably too technical for me to explain. It would certainly take time, so I'll only give you just a few examples to illustrate the point to show that we are not unconscious of this problem, are not complacent about it.

Long ago we installed a treatment plant for domestic sewage from our plants. We have some 2,200 people working there, and it is like a small town in that respect. Yet, even though most of the cities and towns in this State do not treat their sewage, all of the sewage and domestic waste from our plants are treated. In other words, here is a case where we have adopted pollution-abatement measures, despite the costs, but because the engineering and technical answers are known and effective.

In our paper-manufacturing plant we have adopted many procedures and have installed a good deal of equipment to reuse water and to collect out of it solid materials, so as to prevent the discharge of that type of unnecessary waste to the river, where we know what to do and what we do will be effective. Several years ago we installed a fly-ash recovery system in our power plant, and we keep absorbing as an operating cost the expense of continual disposal of this fly ash rather than to permit it to get into the river.

Similarly, the cellophane plant was designed with careful attention to control of waste discharges, and that plant contains elaborate equipment, evaporating, recirculating and recovery installations for this purpose. When that plant was designed and built, a great deal of time and thought was given, and a considerable expense incurred, in order to achieve a desirable pH balance - that is alkali acid balance, and we incur continuing expense to maintain this pH within the limits which the standards set by this Committee aim for.

A permanent part of our research program is devoted to pollution-abatement study and planning and to search for new methods of abatement. Believe me, the literature on this subject would stagger you. The amount of work that is being done on this problem throughout the country is fantastic. We have already spent approximately a half-million dollars simply in research of this type, including pilot-plant trials of some possible treatment methods. While we have not solved the problem of treating our flax-cooking waste water, we have achieved real results by substantially reducing our waste load per unit of production. We have employed independent consultants and we have obtained the expert advice and help of the National Council for Stream Improvement. That's a paper industry association which has had a tremendous program for a good many years in this field, particularly affecting the paper industry. We cite these examples - which by no means show the extensive scope of our efforts - not to ask you to give us credit, but to simply demonstrate that we are acutely conscious of the problems in this field and that we have worked hard to solve them.

In conclusion, then, let me simply emphasize that we have many unsolved problems and a long road ahead of us. We will continue our efforts to find solutions for some of these problems not now capable of practical solution. We hope that technical knowledge will eventually advance so that we can accomplish the purposes which we believe are shared by everyone - that is, the continual improvement of stream conditions without impairing industrial growth and development in this State. We expect to work cooperatively with this Committee so that we, too, will have our share in the results which over the years will come from the cooperation of cities, industries, and every one of us, working together for the improvement of the State's water resources. Thank you very much.

Senator Whitfield: Any questions from the Committee? Mr. Hubbard.

Mr. Hubbard: Thank you, Mr. Brownell. The next individual whom I would like to introduce is a neighbor from across the State line in Tennessee, an expert in matters of stream pollution control. He is the Director of Stream Pollution Control for the Tennessee Stream Pollution Control Board. It is a pleasure to introduce Mr. S. Leary Jones from Nashville, Tennessee. Mr. Jones.

Mr. S. Leary Jones, Director, Stream Pollution Control Board, Nashville 3, Tennessee: Mr. Chairman, members of the Committee, ladies and gentlemen,

please don't pay any attention to that "expert". I happened to bring my brief case across the State line.

Mr. Chairman, I have a statement I would like to file with the Committee. The Tennessee Stream Pollution Control Board is both interested and concerned about the quality of water crossing the North Carolina - Tennessee State line, in the French Broad, the Nolichucky and the Pigeon Rivers. All three are of these rivers are polluted, and they are polluted to such an extent that it affects the reasonable and necessary uses of the water in Tennessee. We are confining our comments as you would assume strictly to that last foot of water at the State line or we're really interested in the first foot as it crosses over and as it will affect Tennessee. We have been very interested in the hearing, and the discussion on the other streams, but our interest is on our side of the line.

We have read this report which was prepared by the staff of the Committee. It's a very complete report concerning both the existing pollution and the recommended classifications. I wish to commend the Committee and their staff. We know what a job it is to prepare such a report. We wish that we had our report on the other side of the line available to submit to the Committee. Unfortunately, we do not have that report completed. But we do have the following comments on the quality of the water in these rivers at the State line as they affect the uses in Tennessee.

Taking first the French Broad River, on page 114 of the report the recommended classification of the river from Ivy River to the State line is shown as "C" with best usage of "fishing". When adequate treatment of the various sources of sewage and industrial wastes is provided we believe that a water of satisfactory quality will be received in Tennessee. We are not able to determine, however, the amount of color reduction that the proposed classification will provide for the paper mill waste, and this is of considerable concern because of the need to use the water in the vicinity of Newport, Tennessee, for an industrial water supply and possibly a public water supply. I think the Mayor of Newport is here. I doubt if they have gone into details recently concerning their plans for expanding their public water supply, but it will have to be expanded some day.

Page 84 of the report shows that the true color varied between 75 and 40 parts per million with an average of 60 at mile F. B. 96.2 which is just above the State line. In 1945 and 1946, the color at mile 77.8, which is on our side of the line, was as high as 300 and above 100 on 11 days out of the 89 samples. I believe these data will correlate with the some calculated 343,000 pounds of color, and I think it is perfectly legitimate to calculate that as pounds in order to calculate back to your low flow condition. Other than that, it's a calculated figure and not of pounds that you can weight in your hand, because this data was collected at 793 cubic feet per seconds. I think this other data that we had in '45, '46 will correlate very well with that. And I'm sure that out of 89 days out of the 365 during that year, there could have been some higher color. We do get a lot of color down there.

On behalf of the Tennessee Stream Pollution Control Board, I wish to request that the quality of water at the State line be suitable so that the water can be used for game fish, for an industrial water supply, for recreational use and for the possible use as a source of a public water supply for Newport.

This water, of course, is a part of the source of water supply at Knoxville and Mr. Quinn is here to discuss that problem. We believe that if the above quality is maintained, that it will protect Knoxville's interests. Now, we should use the water for recreational purposes on the other side. We believe that if the quality "C" is maintained up at the Ivy River, that we are not shooting too low on the Tennessee side of the line. Streams do recover. Unfortunately, I missed getting with the Committee staff last night to find out exactly how color fits into this scheme.

Now, take the Pigeon River. Of course that is seriously polluted by all measures of pollution. Hearing Mrs. Stokely mention the "dead" river, someone commented recently it was unfortunate we couldn't bury the Pigeon River - that anything that dead should be buried. I think maybe it should be - it might be a simple solution to it. On page 174 of the report, it is recommended that Class "D" water be maintained with a best usage of "agriculture". Under remarks we find the statement "Quality required to satisfy the needs of Tennessee."

Uses of this stream include on the Tennessee side of the line: potential use for domestic water supply for Newport, potential use for industrial water supply, potential fishing and agricultural. I use potential deliberately because it could not be used for those purposes at the present time. Therefore, we can't claim a lot of uses on that side of the line. It's too dead. It could not be used for those purposes. I believe, and our Board believes, that Newport is caused real damage especially from the standpoint of economic damage. The water supply at Newport must be expanded, the city knows that, and the two available sources for them are the Pigeon and French Broad Rivers. Neither stream, of course, is suitable as a source of public water supply at the present time. Fish cannot live in the Pigeon River except down near the mouth. I have some pictures in the trunk of my car that shows a few that we collected down there, but up in the upper part of the river, fish cannot live.

The table on page 166 shows the results of analyses at mile P - 45.0 which is on the North Carolina side of the line. The water contains large quantities of B.O.D., chlorides, hardness, color, coliform bacteria and solids. The classification recommended will probably reduce the B.O.D. to acceptable limits, but this may not reduce other measures of pollution to acceptable limits for the various uses on our side of the line. We appreciate the difficulty required in obtaining oxygen in the water from the effluent of the turbines at Waterville Dam. We have considerable data on that stretch of the river and we know that it will reduce the B.O.D. way up in the 90%'s, and I think we will still find zero oxygen coming through the turbines at the dam. I think that fact your Committee will need to face just as we will on the other side of the line. It is necessary that the water be suitable for fish life within a short distance below the State line. We don't have too much worries on that. Oxygen picks up very rapidly even with the 75 or 80 parts per million B.O.D. coming through the turbines now, and that's about 40% the strength of raw sewage. We do not claim that B.O.D. includes the bacteria. It is strictly a measure of the organic pollution, but we've got as much organic pollution in the whole river as you will find in sewage mixed about 1 to 3 or 1 to 2 with tap water. That's why it's dead, I think.

I think that part, we can reconcile and work out very well with the North Carolina staff. We find low oxygen - TVA's measurements show low oxygen - below a number of the dams that have extremely clean water. But within a short

distance below the line, I think those fish are going to have to live.

On behalf of the Tennessee Stream Pollution Control Board I wish to request that the quality of the water at the State line be of such quality that it will not affect the above uses in Tennessee. Now, we know there will be reduction below the first point which you selected as point "D". We have not calculated on down from there to see exactly what it would give in the lake or on our side of the line.

In connection with the Nolichucky River, page 210, shows the proposed classification of the water at the State line as Class "D" with "agriculture" as best usage. This will not furnish water of satisfactory quality in Tennessee and I recommend on behalf of the Board that this classification at the State line be "C" or better.

We have received more complaints on the effect of the mining waste on fishing in the Nolichucky River than on any other stream in Tennessee with the exception of the Pigeon River. Biological and fish census studies of this river substantiate the claims made in these complaints. The table on page 208 shows the turbidity varied between 550 and 240 with suspended solids between 556 and 245 ppm. That was the last station on the Carolina side. We know that these suspended solids are very light weight, and that a large per cent is still in suspension when the water reaches the French Broad River. At times higher turbidities are observed; we found them on up in the thousands. We have not tried to correlate that with rainfall, but it does not correlate at the Greeneville water plant with the rainfall; it correlates with stream flow which means that a relatively constant number of pounds of solids and silt are coming into the river. But in general our data agrees with the data in your report.

Greenville, Tennessee, uses the Nolichucky River as a source for its public water supply. Also, Erwin will need to use this river as a source of industrial water supply. Just try to convince an industry that the water in the Nolichucky with all of the mud it is carrying can be treated. American Enka didn't believe they could treat it down at Lowell. It will treat very readily, but try to convince one that they should pay the extra cost of treating it at Erwin. Fishing has been mentioned above. We have the data - the fish census data - and that stream is seriously affected, in so far as fish life is concerned. All of those uses will need to be protected.

Now, a brief summary. Many new industries are looking at sites in the French Broad River Basin and there are still a number of excellent sites available with labor supply, transportation, power, excellent climate, plenty of water and other needed resources. At present pollution in these three rivers is preventing development of these resources on the Tennessee side of the line. We have plenty of water, but we can't use it.

Recreation is also a big industry in Western North Carolina and a big industry in East Tennessee. I think the income from recreational facilities is very important to the economy of our East Tennessee area as it affects a large number of people. I think it affects more people, more individuals, more income, than three of our larger industries in East Tennessee. Go back and figure it sometime. It affects each individual that is directly or indirectly connected with recreational uses. That is very important to our

people. It is a multi-million dollar development. We can get you quotations from the paper. I think the last figure was up to $600,000,000 a year. That might be just a little high, but I think it's at least $400,000,000. That's a lot of money and a part of these dollars come from north of the Mason-Dixon line.

Also, the existing water supplies must be protected and the water must be reserved for future use at Newport, because there is no other economical solution for this Town. We don't claim it's now used for public water supply because it cannot be.

On behalf of the Tennessee Stream Pollution Control Board, we urgently request that the water of all three of the streams be classified no lower than "C" with special consideration of color or other constituents that will affect the above uses. We believe that the two pollution control agencies from Tennessee and North Carolina have worked together sufficiently throughout the years to understand this joint problem. We also believe that the two State agencies working together have the means - that is the legal and technical means - by which these sources of pollution can be corrected at the State level.

While listening to some of the previous comments, I jotted down a couple of notes which are not in this prepared statement. I was a little surprised at some of the statements of Mr. Watson in regard to certain materials in the Nolichucky River. I think I misunderstood him on drinking this 4 per cent solids. I think that would clog you up pretty badly. At least it will down on the Duck River. We have waste there with 7 per cent solids. It will run about 95% smaller than 200 mesh. Yet those industries are taking those solids out and those wastes are going to the river with a turbidity of around 25 parts per million, at least 98% of the time. We are having a little wind trouble in the large ponds, but it's coming out. Only one has not solved the problem but they are working on it now. There are about six industries, and they are just as broke as they can be. I know they are, but they are taking the waste out. The fishermen there convinced them they had to. We have worked with both the fishermen and the companies and that material can come out. This waste, which may not cause pollution in North Carolina - that's for your Commission to decide - is under the Tennessee law stream pollution, and I was just checking on the Federal Act, and I think you will find by reading that, that such pollution is interstate pollution in accordance with the Federal Act. Mr. Chairman, with your permission, we would like to file an additional statement. Our Board will meet on November 21.

Senator Whitfield: We will not hold you to the thirty day requirement but please get it to us as soon as you can.

Mr. Hubbard: Thank you Mr. Jones. I hope that the program we are initiating in North Carolina will improve our relationship with our good neighbors in the State of Tennessee. I can assure you that we appreciate your comments. We appreciate your past cooperation and look forward to your future cooperation with our technical staff in solving some of these problems. I know from past experience, and I want to say for the benefit of those present today that Mr. Jones is cognizant of the problems inherent in a program of this type and I'm sure that he will be reasonable as long as the State of North Carolina makes reasonable progress toward correcting our problems. We appreciate your comments, Mr. Jones.

The next person I would like to recognize is Mr. Mayland H. Muse, Chairman of the Stream Pollution Committee of the Tennessee Conservation League. Mr. Muse, we will be glad to have your statement at this time.

Mr. Mayland H. Muse, Chairman, Tennessee Stream Pollution Committee, Tennessee Conservation League.: My co-worker said for me not to talk too much and I won't take but a few minutes of your time. Frankly, I'm just a citizen that does a lot of leg work in Tennessee and I might mention one or two things. I know you can't kill industry --- I haven't prepared you any elaborate speech like these learned lawyers and others --- but I'll say that according to the United States Health Department that Tennessee leads the nation today in cleaning up our streams. I want to say that our Committee has to be very fair as a number and number of times we've been called in Committees to come over here and see what could be done in North Carolina. But as long as we're dumping our raw sewage in the streams I see no need of saying anything to you. Now I might say that East Tennessee has only got two towns, Erwin and Newport, and they're so disgusted that they haven't put in their sewage disposal plant, but I think it's in the making right now. We'll soon get it. You people, your industries and your tourists and all of you, we in these United States have always worked together. We've never killed or hurt any individual. We don't want to do those things and I think it can all be worked out.

You know, the most remarkable story - I've just a minute here to tell you - the kids from Tennessee are selling our sewer disposal plants. I know when I went after money to finance - I don't have this kind of money - we distributed some 30,000 of these little booklets, "The Fight to Save America's Waters" last year, and I think we've already passed 20,000 this year. I might mention Kingsport, Tennessee. Bond issues were turned down twice with 90 some per cent against it. The booklets were put out to the kids, just asked them to read them and get their parents to do the same, just an educational program. The third bond issue came up and you know, there weren't but 17 stinkers that came up and voted against our sewage disposal plant. That is a fact. It started in Bristol and it seems like that we have to have a major castrophe like Wytheville, Virginia, to get people stirred up and get them all working together. I hope this meeting has done it. Wytheville, Virginia, had 25% of the people down with polio and 15% death rate. It didn't take them 48 hours to get a sewage disposal plant. What happened at Bristol? Two cities, now you can imagine what you've got in one town, but when you get two cities you've got a real job on your hands. To me the kickoff point in Bristol was when the gasoline leaked upstream, then down Beaver Creek through town, and somebody struck a match at the lower end and set it all afire. Well, for years we've gone by holding our nose and holding our breath as we cross Beaver Creek. When we ran down to see the fire and all that human waste floating and burning there, it didn't take them long to get together and put up the beautiful plant, with the help of Mr. Jones and his laboratories. Polio was the kickoff thing in Johnson City where we built a 6 or 7 million dollar hospital and we no more than got it completed when we filled the first three floors.

I've raised some boys. My boys are in the Navy and the University. The problems you have, I'm taking this back home to you. When the first three floors were filled with polio patients, hundreds of them laying there, my boy was laying there. I thought it was tough, motorcycle accident you know, bones broke in his arms, stainless steel pins in it, but in that same room laying with him was a gangling boy which any of you would be proud to present as your boy. Long, gangling, built like a hound pup with big feet, paralyzed from the waist down.

There in the room with him was his mother, typical Tennessee mother, that we got our Volunteer State name from when we asked in the Mexican War for 2,000 people and got 20,000 boys. You know the story. Those deep blue eyes of hers, I never will forget. I tried to console her; I shook hands with her. Her hands were rough, she was a country woman, a Tennessee mother, a typical Tennessee mother, I should say. I said,"Raising children is tough business." She said, "Yes, but mine may never walk again." So every minute that I have talked, and I might tell you this, our Committee, we got in at 3 o'clock this morning from Lafollette, Tennessee. The rain held us up, of course, but with these pamphlets I hope we can clean up Tennessee and I hope that you people in North Carolina can clean up your streams. I want you to know we are going to cooperate with you. We don't want to do anything out of the way. We don't want to cause you any trouble but by working together I think we can accomplish what we're after today. I think you for the minutes you've given me.

Senator Whitfield: Thank you, Mr. Muse. Now that's why we invited you over here. We're going to cooperate, work these problems out. We know we can't push a button to do it but they mst be worked out and we are all cooperating toward that end. It's going to take time, but the problem will be worked out.

Mr. Hubbard: The next person to be introduced is Mr. John J. Quinn, Chemist with the City Water Plant,Knoxville, Tennessee. Mr. Quinn.

Mr. John J. Quinn, Chemist, Knoxville Water Plant, Knoxville, Tennessee: Mr. Chairman, Members of the Board, I'm appearing at this public hearing concerning pollution of the French Broad River Drainage Basin as representative of the Knoxville Utilities Board, Knoxville, Tennessee. This board operates the Gas, Power, and Water utilities of the City of Knoxville and as such is deeply concerned with the quality of water in the river from which the city obtains its water supply.

The Knoxville water plant is located on the Tennessee River about 3 miles below its formation by the confluence of the Holston River and the French Broad River. As the French Broad River carries about as much water as the Holston River does, we are vitally interested in the characteristics of the French Broad River water.

I've been with the Knoxville Water Plant in the capacity of Chemist in charge of purification for almost 35 years. As such I've been intimately connected with the problems caused by the pollutants in the Tennessee River and its parent streams.

The purpose of my appearance at this hearing is to urge the North Carolina Stream Sanitation Committee to classify the French Broad River and its contributaries so that color and organic matter are kept low so as not to endanger the water supply of the City of Knoxville and to lower the cost of treatment.

The writer vividly recalls the trying experiences in treating the water at the Knoxville Water Plant during the winters of 1939 - 40 and 1940 - 41. During these two periods it was impossible to produce a satisfactory effluent.

The raw water was extremely high in color and with high taste and odor.

The raw water would froth and form leaving a permanent froth which upon drying resembled peat-moss.

The alum dosages were high but we were especially concerned with the sterilization of the water. During those periods our chlorinators were of low capacities so at times we bled chlorine from a ton-container directly into the mixing tank. We were able to keep the water safe but the color of the effluent was like that of weak tea and carried a noticeable taste and odor.

The source of this highly colored and objectionable water was the French Broad River via the Pigeon River. This was confirmed thru the operation of the Waterville Power Plant which shut down during the week-end. About Wednesday of the following week we would receive a much more satisfactory water at the Knoxville Water Plant. This occurred week after week while we were receiving this extreme pollution load.

These two periods of discussion were periods of cold weather, low precipitation and high power production. These conditions gave us a disportinate percentage of paper mill wastes in the source of our Water Supply.

Through the efforts of the Sanitary Division of the Tennessee State Board of Health a conference was held at the Knoxville Water Plant, July 15, 1941. This conference was attended by representatives of the State Health Department, T.V.A., Champion Paper & Fibre Company and others.

The decision of this conference was that a study be made on the treating of a water mixture containing a higher percentage of Pigeon River water than was used in previous studies. The Champion Paper and Fibre Company assigned Mr. James F. Fall to assist in this work.

This study lasted about six weeks. Mixtures were made of collected samples from the Holston, Nolichucky, French Broad above the Pigeon, Pigeon below Newport and Pigeon above Newport. Coagulation, aeration and chlorination were studied during this period.

I will not burden you with further discussion of this study. The reason I am citing this activity is to show you that the Champion Paper and Fibre Company recognized, at that time, that their wastes were detrimental to the water supply of the City of Knoxville to the extent that they were willing to participate and assist in this study.

Before I leave this item, I would like to state that Mr. F. W. Kittrell, then with the Tennessee Health Department, in his comments on a report of the above studies said that if the water from the Pigeon River above Newport could have been eliminated from the Tennessee River at Knoxville the cost of alum would have been reduced by $6,500 and the cost of chlorine by $1,000 during the year 1940.

On February 19th, 1943, the T.V.A. closed the gates on Douglas Dam and thus began impounding water in Douglas lake. This lake has been of great help at Knoxville for by storing the waters of the French Broad River turbidity has been reduced, some biological purification has been accomplished and by retention of the run-off pollutants are diluted. Thus, the water discharged from

the lake is better and more uniform throughout the year.

Although the pollution that we have been describing is still there and is affecting the water at Knoxville, the peaks and valleys have been ironed out.

As the T.V.A. draws down the lake the retention period is lessened and the concentration of pollutants becomes stronger. If I remember correctly, the T.V.A. tries to have their tributary lakes at their highest on June 1st of each year and at their lowest on January 1st of the following year. The period of greatest treatment dosages at Knoxville varies each year but the period is usually from November when the lakes are being drawn down and through March when the lakes are being filled.

During the last five years, there has been deficient rainfall in our area so the lakes have been drawn down at low levels during the colder months.

We have plotted the last five years and are submitting prints with this report.

Alum dosages in grains per gallon, chlorine dosages in parts per million and color of the raw water in parts per million have been plotted along with the flow of the Holston River at Cherokee Dam and the flow of the French Broad River at Douglas Dam less the flow of the Little Pigeon River.

We would like for you to examine these charts and see that the French Broad River has been causing the color in the Tennessee River water at Knoxville. We wish to call your attention to the periods of low levels in the Douglas lake. We believe that you will find the pollutants coming down the French Broad River increases the color of the source of the Knoxville water supply. This color being organic increases the alum and chlorine dosages at the Knoxville Water Plant.

One of the factors in our decision to purchase a 6,000 pound per day chlorinator was the pollution load of the French Broad River and in this decision we have been fully justified.

We began using break-point chlorination in our pretreatment in 1941, so that all of the organic matter in the raw water could be oxidized and eliminated as a hazard to the safety of the City's water.

I don't think we have to prove that organic color removal requires a low pH, higher coagulant and chlorine dosages. Therefore, a reduction in organic color in the raw water at Knoxville will reduce the cost of treatment.

We are not saying that all the pollution in the Tennessee River at Knoxville is coming down the French Broad River for the Holston River carries a pollution load. Each of these rivers have characteristics of their own, the main ones in the French Broad River are color and organic material.

There is a possibility that some day the City of Knoxville might want to use the French Broad River as its source of supply if it were not for the color and organic matter for otherwise its water is much more desirable than that of the Holston River.

We are not familiar with your criterion in your classifications of streams so that we cannot designate our recommendations in your language. So we strongly urge you to hold down the color, odor and organic materials in your streams affecting the French Broad River at Knoxville. We are especially interested in the Pigeon River.

We are asking your consideration of these recommendations for:

First, our past experiences before Douglas Lake with highly colored organic matter reaching Knoxville has been almost catastrophic.

Second, although the effect of the impoundage of the water in Douglas Lake has had a leveling and beneficial effect on the pollution load of the French Broad River water, there had been a marked increase in our chlorine demand when the lake is drawn down to low levels.

Third, the potential danger to the Knoxville water supply is still present for if the Douglas Dam becomes inoperatable, we would be back to our experiences in the 40's. Fourth, the high color and organic matter in the French Broad River above Knoxville precludes its use by the City of Knoxville although in other respects its water is more desirable than that of the Holston River water.

Fifth, the pollution in the French Broad River increases the cost of purification chemicals at knoxville.

We hope that the above report and charts will aid you in your classifying the streams of the French Broad River system and that you will see fit to abate the pollution load of the water in the French Broad River at its mouth.

Mr. Hubbard: Thank you Mr. Quinn. We've heard from several gentlemen from Tennessee. Now, we will switch back and hear from one from North Carolina. Mr. J. W. Fowler, Jr., Superintendent of the Lake Junaluska Assembly at Lake Junaluska. Mr. Fowler.

Mr. J. W. Fowler, Jr., Superintendent, Lake Junaluska Assembly, Lake Junaluska, N. C.: Mr. Chairman, members of the Committee, it is apparent that this is serious business with us all.

It is said that the former Governor of Idaho was making his bid for re-election for the third time and in the course of his address in one of the communities, he said that "All we need in Magellan Flats is some good people and some water." A wag in the back of the room was heard to say, "That's all they need in hell".

Fortunately, in Western North Carolina and in Tennessee we have good people and we have water. I am convinced that by the spirit of this meeting today, that we are going to cooperate in bringing about advancement in the solution of our problems.

Once on an occasion similar to this when the folks were all weary, one man stood up and said, "I move we declare a meritorium on problems for one year". Somestimes we all feel that way.

I would like to speak just a moment and I represent Lake Junaluska, the Methodist Assembly, and unofficially represent the Town of Waynesville and the Town of Hazelwood. We also represent that section of the tributary of the

Pigeon River known as Allens Creek or Richlands Creek from the mouth of Richlands Creek at the Pigeon River back to its source. We have a problem that involves industrial and domestic waste and it's a little different in that we have an inadequate trunk line which gives unto us at Lake Junaluska more than our share of the domestic and industrial waste from the communities above. I'm glad to report to the Committee in expressing our gratitude to you for the work you are doing, and along with our thanks for your coming and listening to us. I'm glad to report that we, in that particular section, have advanced from that type of immature thinking where we cast threat with each other. We have been able to sue and that sort of thing. I'm glad to report that we have at least come to the stage of maturity when we realize that this problem confronts us all. The three communities have already employed engineers who have made a study of our particular problem. I want to express the appreciation for the dependable information gathered by the technicians and others and provided for us in this report. I'm prepared to say that we are going to cooperate with you. We want to invite you and encourage you to come and assist us in setting up a time table that will bring about some needed and urgent relief to us, but at the same time not at the expense and at the hurt of our neighbors, the municipalities nor the industries farther up the stream from us. I represent all of the communities, unofficially the other two and officially the trustees of Lake Junaluska Assembly. We would like to have your assistance in setting up a time table so as to bring about the relief and to bring about the correction of the condition at the earliest possible time, keeping in mind that we must not do unnecessary injury to our neighbors farther up stream from us. Thank you very kindly.

I would like to say that we would like to submit a further report in writing to the Commission.

Mr. Hubbard: Thank you Mr. Fowler. I would like to say to you that we will be glad to work with you and the Towns of Hazlewood and Waynesville, in any way we can to help solve your problems.

I would now like to recognize Mr. James R. Stokely, of Newport, Tennessee. He is an author, and I believe the husband of the lady that spoke this morning. Mr. Stokely, we would be glad to hear from you.

Mr. James R. Stokely, Author, Newport, Tennessee: Mr. Hubbard, members of the Committee, ladies and gentlemen. First, I would like to ask Mr. Muse for about 50,000,or maybe 100,000 - of those booklets. I have a couple of boys and I'd like to put one of them down at Newport with 50,000; and one at Canton with 50,000 so they could meet about half way, distributing about 1,000 per mile.

I also represent officially the Conservation Committee of the Kiwanis Club of Newport, Tennessee. Newport, as you know, is situated just above the fork of the Big Pigeon and the French Broad, sixty-five miles west of Asheville. As a lifetime resident of this mountain region, a native of Tennessee and, for the past fifteen years, a taxpayer of North Carolina, I am here to urge the restoration of the purity of our waters by all those responsible for polluting them. I want to say right here in reference to what Chairman Whitfield said earlier, that we don't have either schemes or plans - just prayers. The only scheme we might concoct would be to elect Kerr Scott an Honorary Senator of Tennessee, but I'm afraid he would refuse the job since not even a catfish can

live in the Pigeon River.

According to the 1957 Pollution Survey Report of the North Carolina State Board of Health, the Champion Paper and Fibre Company, of Canton, discharges industrial waste into the Pigeon River that is estimated to be equivalent in strength to domestic sewage from a population of 624,000 persons. This waste, being highly obnoxious in odor, highly colored as well as high in oxygen demand, reduces the dissolved oxygen in the stream to zero. Ladies and gentlement, this is the zero hour, the hour of pure and simple murder, the killing of a stream.

I quote from a letter dated October 18, 1957, from the director of stream pollution control of the Tennessee Department of Public Health, in Nashville, Mr. S. Leary Jones: "The Pigeon River is seriously polluted at Newport. The water is not suitable for a domestic water supply or an industrial water supply. Fish will not live in this stream. The odor from the river water creates a nuisance. The major part of this pollution originates at the paper mill at Canton, N. C. Other pollution is discharged to the Pigeon River in the Waynesville area. We have recommended that treatment works be built to correct these sources of pollution in North Carolina. It is my understanding that industries needing clean water have not considered sites at Newport because of the color and organic pollution in the Pigeon and French Broad Rivers.... Pollution from these streams damages East Tennessee considerably, especially from the economic standpoint and from recreation standpoint. We believe this problem can and must be corrected and that it is reasonable to request the State of North Carolina to see that it is corrected."

I want to call especial attention to the proposed classification for the Pigeon River, Table 10, p. 172, of the 1957 North Carolina Pollution Survey Report: From Highway #25 Bridge at the Champion Paper and Fibre Company to the mouth of Crabtree Creek, Best Usage, "Waste Disposal," Proposed Class "E". Does this mean that the worst offender, by far, in the entire region, whose waste, as I have said, matches a population equivalent of a city of 624,000, shall be least required to meet its civic responsibility? Why couldn't it do as much, as Senator Scott mentioned earlier in the day, as the Riegal Paper Company, down on the Cape Fear River? And, then, p. 174: From the mouth of Crabtree Creek to the state line, Best Usage, "Agriculture", Proposed Class, "D", with the remark, "Quality required to satisfy needs of Tennessee." Ladies and gentlemen, the needs of Tennessee are terrific, and are by no means limited to Class "D" or"Agricultural". In fact, there is hardly a thousand acres along the Pigeon suitable for cultivation (or irrigation) from the mouth of Crabtree Creek to the outskirts of Newport. What Newport needs is a decent water supply from the Pigeon River to attract industry and tourists. Instead of "E" or "D" classification, we need "C" and "B", which includes fishing, bathing and recreation.

There is now a new, fifty-mile, four-lane highway being built between Newport and Canton, which will be a water-level route along the Pigeon River, skirting the entire northeastern end of the Great Smoky Mountains National Park, some of the most beautiful country in the world. Three million tourists will be visiting the Park annually, many of them following this new and inviting road. Some of them would like to stop their cars by the stream, stretch their legs, breathe the air, perhaps pic-nic under a tree. Will we have to petition Detroit to make clothes pins - or nose pins = standard equipment for every vacation car that heads for the Smokies?

Why should the people of this whole region have had to wait fifty years for this outrage to be seriously considered for what it is? Is the Golden Rule only a myth, to be rendered null and void by the law of the jungle? When a mammoth corporation regularly makes ten million dollars net profit a year, is it unreasonable to expect, for one year, a Christian tithe of ten percent to clean up the mess it makes? We have been told that the rate of pollution has been cut fifty percent the past few years; on the other hand, in that period production has been doubled; and that leaves us back where we started, with a black, smelly river, fit for neither fish, fowl nor human. Do you ladies and gentlemen realize that not a single fish, not even a mud fish, not even a rat-tailed maggot, can live in the once-beautiful Pigeon River above Waterville Lake? And that condition goes on down, I guess, about as far as the silt comes in. There's not much that can live there. We can't even make moonshine out of the Pigeon. Where is respect for one's neighbors, for one's self?

The immense Bowaters Paper Company, which located on the Hiwassee River in East Tennessee a few years ago, has provided adequate treatment works and its waste does not pollute that stream. And it manages to make an eminently satisfactory profit each year. Only a few miles away is Copperhill, Tennessee, where a generation ago fumes from the factory there killed all vegetation within a six-mile radius. Then a by-product, sulphuric acid, was evolved from the waste, and it reportedly became the company's most profitable item, and a countryside was saved as well.

Because these life-giving rivers belong to everyone, they are the possession of no one. Those rights today legally known as riparian rights go as far back in man's history as the Institutes of Justinian, when running water, like air, was "common to all and property of none.". How, then, can we sanction a man's or a company's seizing these rights and using this common property without equally assuming responsibilities in regard to that property? It will be the highest awareness of democracy when men realize that freedom must be nourished by justice. If a man or a company fouls a stream, it is mandatory that the waste be properly treated so the stream can join civilization again.

Carelessness begets carelessness. As we in Newport receive the water befouled, we add our own waste for the neighbor below us in Knoxville, who drinks the water. However, approximately 92% of the pollution discharged into the French Broad and Big Pigeon Rivers originates in North Carolina. Furthermore, these rivers contain sources responsible for one-fourth of the total pollution of North Carolina. As these conditions are remedied, we feel that the pressure for virtue, both civic and spiritual, as well as for economic and recreational survival, will be transmitted downstream also. A chain reaction can then set in - of water conservation rather than exploitation.

As man's scientific genius has recently drawn our eyes upward and outward with awareness of universes beyond this earth, would it not be tragic, indeed, if we neglected our scientific skills and wasted the resources of this world? As we look out into space, let us not forget to look down into ourselves; as we seek to discover the secrets of nature beyond us, let us not destroy the wonder of nature around us.

Here in America we are a nation of laws as well as of men. Give us time and we will do the right thing. I say it is time that pure water be recognized as one of our most valuable natural assets, more precious than oil or gold.

The classification of this river basin, and the subsequent purification recommendations and plans which must result therefrom, have been a long time coming. But industries and cities, and their individual members, must now realize their responsibilities. And if purification of our water costs - as it will, as does education or any other creative activity - it can never cost as much as will our neglect - as it already has. Resources conserved today mean wealth and health for our children tomorrow. Thus, it would be difficult to overestimate the work of this committee.

Ladies and gentlemen, I say it is time here in America, and particularly in Western North Carolina and Eastern Tennessee, that we practice what we preach, that we conserve our basic resources and, like faithful stewards, evolve a respect for the sacredness of the natural and human world, pass on to our neighbors and to our children the bounty of this earth in as fine a shape and as pure a quality as it comes to our hands, and in the end we may all be redeemed by the wonder and majesty of life itself.

Mrs. Bishopric: Thank you so much Mr. Stokely for that inspiring message. It's always good to have a very frank discussion in families and we are certainly a family - North Carolina and Tennessee - and there is not anyone in North Carolina who feels that anything can be done in Tennessee that can't be done in North Carolina. It is often a very healthy thing to know just exactly what our neighbors and our family across the line think of us. We sincerely appreciate your coming and giving us this picture. I am sure the picture you have painted is a bit of a surprise to many here as it was to me. I had no idea your streams were quite as bad as you portrayed them in your picture.

Mr. Hubbard: Thank you Mr. Stokely. Did you leave a copy of your statement with the secretary? Thank you sir. The next person to be recognized is Mr. C. M. Douglas, Secretary to the Transylvania County Chamber of Commerce of Brevard. He indicated that he would like to make a statment if the occasion requires. Mr. Douglas, have you decided that the occasion warrants a statement?

Mr. C. M. Douglas, Recording Secretary, Chember of Commerce, Brevard, N.C.: We would like for the Town of Brevard and the County of Transylvania and the Brevard Chamber of Commerce to have the privilege of filing a brief because some of these folks are nearly as tired as I am and this procedure will save time.

Mr. Hubbard: Thank you Mr. Douglas. Your brief will be accepted if received any time within the next 30 days and we would be happy to have it. We would now like to recognize Mr. W. C. Ruble, Jr., Mayor of the City of Newport, Tennessee. Mr. Ruble. Is Mr. Ruble in the room at the present time? I guess he had to leave.

The next individual to be recognized is Mr. James S. Frank, President, Chamber of Commerce of Newport, Tennessee. Mr. Frank has left the room so that concludes those who have indicated they would like to offer comments. Now I would like to ask if any others that are present would like to offer any word of advice or have any comments to make. If not, Mr. Chairman, this concludes this portion of the hearing.

Senator Whitfield: Ladies and gentlemen, it has been a pleasure being here with you today. Do your job as you please, but remember that the job has to be done and should be done in a cooperative spirit. Mr. Young, would you like to say something? Mr. Young.

Mr. Lewis a Young, Assistant Regional Engineer, U. S. Public Health Service, Atlanta, Georgia: No sir, I would like to say that I think both of the States are doing an excellent job. I wish you every success in your undertaking. It is very difficult job and I am sure you are doing the splendid work that needs to be done. Congratulations.

Senator Whitfield: Thank you Mr. Young. Is Representative Crawford here? He's not here now. Mr. Doutt, would you like to say something? (Mr. Doutt answered in the negative.) Now, I would like to give the members of the Committee a chance to speak. Mrs. Bishopric, our Vice-Chairman, do you have anything further you would like to say? (Mrs. Bishopric answered in the negative.) Mr. Vann, we'll be happy to hear from you.

Mr. J. N. Vann, Member, State Stream Sanitation Committee, Ahoskie, N.C.: Mr. Chairman, I don't think I need to worry this group of people who have come here to help us. I'd like to say this to you, Mr. Chairman. I'm reminded of my favorite scripture situation. Jonah, after his experience in the belly of the whale was cast upon the shore, and he turned to the whale and said, "If you had kept your mouth shut, this never would have happened".

Senator Whitfield: From now on, I'll keep my mouth shut.

Mr. Vann: Some time ago, a friend of mine came home early in the morning and at breakfast he had this conversation with his wife. He said, "You know a funny thing happened at the club last night, the president offered a fine silk hat to any member who could stand up and truthfully say that he had never kissed another woman since he had been married, and you know," he said, "not a one of them stood up". She said, "Well, John, I'm amazed, why didn't you stand up?" He said, "Mary, I was going to stand up, but you know I'd look like hell in a silk hat". I might look like hell here talking to you about the subject matter that has brought us together, but I'd like to say personally, I've been coming virtually from the ocean to the mountains on a sort of a vacation for many, many years, longer perhaps than some of you have been occupying this area. It's always been an inspiration to me because we saw something entirely different from what we could see close at hand, close to the coast. While coming up here the other afternoon, I would have to take orders from my wife and stop constantly so she could look over the vast area in its beauty and splendor. The people up here always looked extremely prosperous, happy, and healthy. It's beautiful. But today, after hearing the young lady's magnificent speech about who killed the French Broad, it doesn't look so good. That speech sort of excited my emotions a little bit because I knew the French Broad was a sick woman, but I didn't know she was dead. It has been said by someone, I don't know who, that the first 25 years of man's life is spent in learning to do some things; the next 25 years is spent in learning some things not to do. In the first place, you pass through an era of enthusiasm, and the next, one of doubt. But if he does not become a pessimist, he then might have a few years remaining in which to become a useful and productive member of the community. When we began to investigate our water problems, I thought all the bad boys were down east, but since these gentlemen from Tennessee have had so much to say about what

people of North Carolina are doing to them, I'm about to believe most of them are up here. I don't think we've got them all down east. Anyway, I don't think we people can continue to dump our human leavings and industrial waste on our downstream neighbors and expect them to like it. Pollution is like sin, everybody's against it. Thank you.

Senator Whitfield: Mr. Upchurch, do you have anything you would like to say?

Mr. Upchurch: No sir.

Senator Whitfield: Mr. Clark.

Mr. Clark: I just want to say you've got some difficult problems in this area, there's no question about that. I think with the fine cooperative spirit expressed here today they will certainly all be resolved satisfactorily. It's been a pleasure being here.

Senator Whitfield: Mr. Mayor, your honor.

Mayor Berkeley: I want to say "amen" to what my good friend, Walter Clark, has said. I've enjoyed being up here in this fine section of the State of North Carolina. I'd like to say to the folks up here in the area of the French Broad and the Toe and the Pigeon, that we people down in the east have recently had to ask and have received the utmost cooperation from the citizens of the Commonwealth of Virginia and I would like to say to the great citizens of the neighboring State, the Volunteer State of Tennessee, that they are making no more demands on North Carolina than North Carolina is making on Virginia. It's a problem that we have to solve. We folks here in Dixie, you know, like to think along the subject of State's rights and as we grow a little older, our life becomes more complex by what we have to do; for example, to meet the threat of sputnik which has given us pause for which I am thankful to say, we are about to give poison to, due to the fact that we've done something down in Florida today, as reported in the newspaper. We can solve these problems by working together. Free people always have been able to solve problems. I'm going to assure this Committee and all the people here in this area from wherever they come, that we have a consciousness about this situation in regard to the pollution of our streams and the upper riparian owners have to clean up and will clean up for the lower riparian owners on down ad infinitum. I do appreciate, myself, and on behalf of the Committee, the fine help that has been given us by all segments of our society here in the area which is embraced in the French Broad River Basin including the Pigeon and the Toe Rivers. We're going to do something. There's no question about it, and I want to thank the charming lady that appeared here today, Mrs. Stokely, for the best brief that's been filed.

Senator Whitfield: Ladies and gentlemen, it isn't often that a person is indispensable; I always like to say that there is no one but what someone can take his place, but once in a while, that person comes along. We have that person, Mrs. Marjorie Carmichael, our efficient secretary. She can run any stream pollution office anywhere in the land.

Ladies and gentlemen, it's been heartwarming to have this meeting here and to receive the cooperation of all of you. We know that these problems are going to be solved. We may not know exactly how yet. We know we don't have

all the answers but we do know this: people working together with courage and determination can find the answers. I used to think, as I have said before in previous meetings, duty is the sublimest word in the English language, but as sublime as that is, I've learned down through the years, that there's one even more sublime than the word duty and that's courage. If you haven't got courage, I don't care what you try to do, you're not going to do it. It is particularly pleasing to me, after all these years, to see this dream of cleaning up our streams beginning to come true, although, the actual accomplishment is in the years ahead. I have been in this battle since 1945. I remember the first two gray hairs I had on my temple, my wife named them "stream pollution" because of the three years that I worried and worried to help get the law on the Statute books. By cooperation we are going to solve this problem and it is a good thing we caught this pollution when we did, because it had been encroaching on us rapidly, and still is, but we have gotten it stymied here and there. On the streams we have classified, we are beginning to see progress and slowly you are going to see this region blossom. You are not going to see it blossom so quickly. Now, let's don't get too optimistic because you don't cure a very sick man over night. Now, that doesn't mean all the regions are sick, but many of them are. Mr. Knight, suppose we had the pollution down east that we have up here on the French Broad, what would happen?

Mr. Knight: Conditions in the East would be far worse than in the West due to the lesser reaeration potentials in the sluggish waters of the East as compared to the more rapidly flowing waters of the West.

Senator Whitfield: You can stand more pollution than we can. That might not seem so, but down on the Pamlico River we would be in a terrific fix, if we had the pollution you have up here. But now, as I say, we are beginning to see improvements, slowly, slowly, but improvements are going to take place and truly this will be the land of the sky. I often think about some people after reaching a decision being profligate. We have been prodigal with our resources, destroying them. Now, we will pay. I think about that little poem on King Solomon and King David, who almost waited too late to reform but they did. "King Solomon and King David led merry, merry lives, with their many, many pleasures and their many, many wives; but when old age overtook them with its many, many qualms, King Solomon wrote the Proverbs and King David wrote the Psalms." Good-bye.

(The meeting adjourned at 4:35 P. M.)

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The following resolution, letters, briefs, and affidavits were received by the Secretary concerning the public hearing held at Asheville, North Carolina:

BUNCOMBE COUNTY WILDLIFE CLUB

Asheville, North Carolina

RESOLUTION REGARDING THE ESTABLISHMENT OF WATER PURITY STANDARDS FOR THE RIVER BASIN OF THE FRENCH BROAD RIVER AND ITS TRIBUTARIES.

WHEREAS, The FRENCH BROAD RIVER has become so seriously polluted by siltation and by Municipal and Industrial Wastes that it can no longer be used, over the most of its length, for Recreational purposes; and

WHEREAS, Because of this pollution, the Small Mouth Bass and the Mighty Muskelunge, Native to the Tennessee River basin only in all the southern States, once prevalent in these waters, have been almost entirely eliminated, as has also the fishing for these and other species of fish; and

WHEREAS, The loss of Fishing has caused the entire River Basin Area to suffer economically from loss of untold revenue, both direct and indirect, from Tourists and from Native Fishermen. (This Revenue by National average amounts to Ninety-Two Dollars per year per person); and

WHEREAS, The Problem of Public Health has been made more severe by the dumping of raw and untreated Sewage into the French Broad River by Municipalities, thereby endangering the Health and offending the senses of all Persons Downstream; and

WHEREAS, The heavy pollution of The French Broad River, by both Municipality and Industry, has seriously restricted the addition of new Industries, thereby again adversely affecting the Economic Strength of the entire area adjacent to the River Basin; let it, therefore, be

RESOLVED, By the Members of THE BUNCOMBE COUNTY WILDLIFE CLUB, Meeting in Special Session October 8, 1957, that we hereby request the North Carolina State Sanitation Board to assign, for the best use of all persons affected, Water Quality and Water Purity Standards to the French Broad River as follows:

Class A1, or A2, to all Tributary Streams and to the Main Channel of the River above Brevard, N. C.

Class B to the entire River Channel below Brevard, N. C.;

and be it further,

RESOLVED, That copies of this Resolution be sent to the N. C. State Stream Sanitation Board, To The N. C. State Board of Health, To The N. C. Wildlife Federation, To The N. C. Wildlife Resources Commission, and to other interested Agencies.

BUNCOMBE COUNTY WILDLIFE CLUB
N. C. Austin, President
Lewis J. Fisher, Secretary

COCKE COUNTY HEALTH DEPARTMENT
State Department of Public Health Co-operating
Newport, Tennessee

The Cocke County Health Department requests that the state of North Carolina require the cities and industries that empty untreated sewage and industrial waste into the French Broad and Pigeon rivers to so treat this sewage and waste that it will not be a nuisance to the citizens of Cocke County, Tennessee, because of the following reasons:

1. The chemical pollution of the French Broad and Pigeon rivers prevents the town of Newport, Tennessee, from using either of these rivers as a surface water supply.

2. The Pigeon river creates a public nuisance at Newport and at Hartford. The odor arising from the river is nauseating and the acid fumes have taken paint off the outside of houses.

3. The recreational value of these rivers has been destroyed. Fish cannot live in the Pigeon river and swimming is impossible in either river.

Respectfully,

J. Hatcher Graham, Sanitarian
Cocke County Health Department

TOWN OF CANTON
North Carolina
Bruce G. Nanney, Mayor

November 12, 1957

State Stream Sanitation Committee
North Carolina State Board of Health
Raleigh, North Carolina

Attention: Mr. E. C. Hubbard, Executive Secretary

Dear Sir:

On page 171 of your Pollution Survey Report Number 5 for the French Broad River Basin, the section of river indicated by Roman numeral II has a proposed classification of "B".

This is a short section of the Pigeon River from the town water supply intake just south of Canton to the highway bridge in the center of town.

Due to waste, drainage and contamination from the proposed areas adjacent to this section of the river, it is thought that this should be classified as "C" rather than as "B" in your proposal. The above mentioned waste and drainage might very well render this water unfit for such uses as bathing.

Hoping that this will meet the approval of your committee, I am

Very truly yours,
TOWN OF CANTON
(s) Bruce G. Nanney,
Mayor

BGN:wm

BEFORE THE
STATE OF NORTH CAROLINA
STATE STREAM SANITATION COMMITTEE
STATE BOARD OF HEALTH
RALEIGH, NORTH CAROLINA

In the Matter of
Classification of the Waters
of the
FRENCH BROAD RIVER DRAINAGE BASIN

BRIEF ON BEHALF OF
AMERICAN ENKA CORPORATION
In Relation To
Proposed Classification for the Waters
of
Hominy Creek

This brief is being filed on behalf of American Enka Corporation (hereinafter called Enka) under Section 143-215 (e) (3) of Article 21 of the General Statutes of North Carolina (hereinafter called the Statute) as an aid to the State Stream Sanitation Committee (hereinafter called the Committee) in the discharge of the Committee's stated statutory duty to assign to the waters of the French Broad River Basin classifications which will promote the policy and the purpose of the Statute most effectively.

LAW

G. S., Section 143-215 provides as follows:

"Water Classification; Standards and Assignment of Classification. - (a) Duties of the Committee Under this Section. - The Committee is hereby directed and empowered, as rapidly as possible within the limits of funds and facilities available to it, and subject to the procedural requirements of this article:

> "(1) To develop and adopt, after proper study, a series of classifications and the standards applicable to each such classification, which will be appropriate for the purpose of classifying each of the waters of the State in such a way as to promote the policy and purposes of this Article most effectively."

As is pointed out by this section, it is the duty of the Committee to classify the streams in accordance with the overall policy of the Statute. Enka respectfully submits that the proposed classification of Hominy Creek does not comply with the policy of the Statute.

POLICY AND PURPOSE OF THE STATUTE

G. S., 143-211 provides as follows:

"Declaration of Policy. - It is hereby declared to be the policy of the State that the water resources of the State shall be prudently utilized in the best interest of the people. To achieve this purpose,

the Government of the State shall assume responsibility for the quality of said water resources. The maintenance of the quality of the water resources requires the creation of an agency charged with this duty, and authorized to establish methods designed to protect the water requirements for health, recreation, fishing, agriculture, industry and animal life. This agency shall establish and maintain a program adequate for present needs and designed to care for the future needs of the State."

As pointed out in this section, the overall policy of the Statute is that the water of the State should be utilized to the best interest of the people. The term "people" as used in the Statute is an all-inclusive term and consists of many individual persons representing various conflicting interests. It is quite evident that the waters of the State cannot be classified in such a manner as to be in the best interest of every individual. The conflicting interests of various individuals comprising the "people" must be weighed in this proceeding in order to evaluate what will be in the best interest of the "people".

BEST USAGE

To aid the Committee in classifying the streams in the best interest of the people, the General Assembly laid down certain guides to follow. G. S., Section 143-215 contains these guides in the form of criteria for assignment of classifications and requires the Committee to consider such criteria in assigning classifications. The Committee has recommended classification "D" as the classification for the waters of Hominy Creek. The Rules and Regulations adopted by the Committee on November 19, 1953 state that the best usage of class "D" waters is: "Agriculture, industrial cooling and process water supply, fish survival and any other usage, except fishing, bathing, or as a source of water supply for drinking, culinary, or food processing purposes."

Because of various conditions prevailing in the segment of Hominy Creek between Enka and the mouth of Hominy Creek at the French Broad, Enka believes the Committee is in error in assigning a classification of "D" to that segment of Hominy Creek. Enka submits that the best usage of these waters is not for agricultural or industrial water supply purposes. To support this position, the various criteria for classifications contained in G. S. 143-215 and their relationship to the lower segment of Hominy Creek will be discussed separately in this brief.

CRITERIA FOR CLASSIFICATIONS

(1) "The size, depth, surface area covered, volume, direction and rate of flow, stream gradient and temperature of the water."

Hominy Creek is a small creek. Even at its mouth at the French Broad it is not more than 15 feet wide. It is shallow with a rocky bottom and a rate of flow (at dry season) of less than 10 m.g.d. The segment of the Creek here under discussion is about 7 miles long while the actual straight line distance from Enka to the French Broad is only about 4 miles. The stream is very crooked and winds among steep hills with very little flatland adjacent to the Creek. Such a stream cannot be expected to serve a large variety of different purposes.

(2) "The character of the district bordering said water, including any peculiar suitability such district may have or any dominant economic interest or development which has become established in relation to or by reason of any particular use of such waters."

As has already been pointed out, the land bordering Hominy Creek is hilly and rough and there is little flat land adjacent to the Creek. Due to the character of the land, it is not suitable for extensive agricultural or industrial development. Very little agriculture is carried on below the plant. No crops are being raised which would require irrigation and the Creek water is not being used for watering livestock. While there is a small amount of pasture land below the plant, there is an adequate supply of water from small creeks flowing into Hominy Creek which are suitable for watering cattle. Therefore, Hominy Creek water is not being used, nor is it likely to be used in the future, for agricultural purposes.

There is no present industrial development below the plant. There is no site suitable for the location of an industrial plant because there is not sufficient flat land for a plant site.

Since there is neither present nor potential future use of the waters in question for either agricultural or industrial process purposes, it is difficult to see the justification for a classification based on these purposes as "best" usage. On the contrary the district in question would appear to lack altogether "any peculiar suitability" for such purposes.

With regard to "dominant economic interest", the situation is so clear that it needs no argument. The Enka plant was built in 1929 and its impact on the economy of the area is well illustrated by the fact that during the great depression when all the local banks were closed except one, Enka grew in strength, raised the salaries of its workers, and largely sustained the area economically. Enka is the largest employer not only in Buncombe County, but also in Western North Carolina. The Enka plant represents a present capital investment of $35,000,000, employing 3,584 persons in 1956 with an annual payroll of $15,240,498. Our records show that 9,817 persons in North Carolina are directly dependent upon the wages paid by Enka. Undoubtedly, it would take hundreds of years for the gross income of all possible future developments of the land adjacent to the seven miles of Hominy Creek below the Enka plant to amount to as much as the payroll of the Enka plant for one year.

Not only does American Enka have an effect on the economy of this area, but also on the nation as a whole. Enka is the nation's second largest producer of rayon and as such plays a major part in the area of national defense. After the outbreak of World War II, at the request of the U. S. Government, an additional unit for the production of high tenacity yarns was put into operation and Enka supplied rayon for the manufacture of airplane tires and truck tires, self-sealing tanks and hose, parachutes, flying suits, blood plasma filters and many other items.

It is the duty of the Committee to balance the interests of all those affected by the proposed classification and arrive at a classification that is in the best interest of all the "people". That Enka is the "dominant economic interest" which "has become established in relation to" the waters of Hominy Creek would appear to be manifest and particularly so in view of the sparsely settled area below it which is not suitable for either agricultural or industrial development.

(3) "The uses which have been made, are being made, or may in the future be made, of such water for transportation, domestic consumption, industrial consumption, fishing and fish culture, fire prevention, the disposal of sewage, industrial waste and other wastes, or any other uses."

It is the inevitable result of large scale industrial production that certain waste materials will be generated. The problem of disposing of these waste materials is one of prime importance. Without a practical means of disposing of these wastes, production could not continue. The troublesome waste product from Enka consists mainly of solutions which affect the pH of the stream. The only part of the French Broad River Basin affected by the waste from Enka is the short stretch of Hominy Creek of about seven miles which lies between the plant and the mouth of Hominy Creek at the French Broad.

Enka is not, nor has it ever been, a major contributor to the pollution of the French Broad River. The industrial waste of Enka has little, if any, effect on the French Broad River and a classification of "E" on the Hominy Creek would not interfere with the proposed classification of "D" on the French Broad. As shown by the Committee Report, on page 78, Section 37-A, the pH in the French Broad below Hominy Creek is within the range required for class "D" waters. This would indicate that the industrial waste discharged by Enka is not reducing the quality of the French Broad waters below the standard required for class "D" waters.

As has already been pointed out, it is highly unlikely, if not impossible, that an industry would ever be located on Hominy Creek below Enka due to the character of the terrain and the unavailability of flat land for a plant site. While it is possible that these waters might be used to a small extent as a source of water for agricultural purposes, the amount of farm land affected is negligible. The present chief usage of the waters of Hominy Creek below Enka is for waste disposal. This usage does not interfere with any usage presently proposed on the French Broad.

For the foregoing reasons and until such time as radical changes in present circumstances occur, the best usage of the waters of Hominy Creek below Enka is for waste disposal and, to conform with the policy of the Statute, these waters should be classified as "E".

(4) "The extent to which water is already receiving sewage, industrial waste, or other waste as a result of present or past usage of the water, and the relative economic values involved in improving or attempting to improve the condition of such water."

The water of Hominy Creek before it reaches the Enka plant is already polluted with raw sewage. As shown in the Committee's Report, on page 72, the average m.p.n. of coliform bacteria above Enka is 52,000 which evidences the fact that the stream is highly polluted by sewage. As far as the coliform bacteria is concerned, the water in Hominy Creek is in better condition below the Enka plant than it is above the plant. As shown in the Committee's Report, on page 74, the average m.p.n. of coliform bacteria below the Enka plant is only 13,000 as compared with an average of 52,000 above the plant. West Asheville discharges raw sewage into Hominy Creek below the Enka plant, with four large outfalls into Hominy Creek below Enka. There are also private sewer lines which are discharged into Hominy Creek.

There is no chance of meeting a "D" classification in Hominy Creek until all the sources of pollution are controlled. It is impractical at this time to classify Hominy Creek as "D" due to the fact that before West Asheville and the others who are dumping raw sewage into Hominy Creek can comply with a "D" classification, they will have to build treatment facilities. These treatment facilities will require taxpayer authorization for the expenditure of a great deal of money and no doubt will encounter a great deal of opposition.

Until progress has been made on these problems and until other circumstances permit a classification on the French Broad which might be affected by an "E" classification for Hominy Creek, there is no legal justification for a "D" classification on Hominy Creek below the Enka plant.

PROGRESS MADE BY ENKA

Let us make it clear that it is the desire and intent of Enka to do its part in improving the condition of the water in Hominy Creek regardless of classification requirements. As has already been pointed out in our oral statement, which is on file with the Committee, Enka has been concerned about and working on projects for the improvement of stream conditions of Hominy Creek for some 20 years. With regard to the problem of acid recovery, the progress that has been made is evident from the fact that in 1930 when Enka was producing less than 5,000,000 pounds of rayon per year, acid waste amounted to 1.43 pounds for each pound of rayon. Since then, a complex recovery system consisting of crystalizers and evaporators that have cost a total of over $800,000 has reduced acid waste to 0.1 pound per pound of rayon or a reduction of 93 per cent. As a result, although our production of rayon last year was some nine times greater in amount, the total acid waste resulting was substantially less than in the early 1930's.

Similar progress has been made in other areas. A caustic soda recovery system which is valued at some $350,000 has been equally impressive in reducing this type of waste. During the years 1949 and 1950, three settling basins were constructed at a cost of approximately $125,000 in an effort to eliminate suspended solids from our effluent. This settling basin system has solved the problem of solid materials in our waste water by removing 90% of such material from the waste water which is now treated in this fashion.

Last year Enka completed the installation of an entirely new type of boiler for its power plant at a cost of nearly $1,000,000. One feature of

this mammoth piece of equipment is a system designed to permit the recovery of fly ash and its elimination from Hominy Creek. This feature which increased the cost of the boiler by more than $100,000 was a major reason for Enka's selection of this type of equipment.

As was also pointed out at the hearing, Enka is willing and prepared to continue its voluntary efforts to improve the condition of its effluent. However, as Senator Whitfield said in the public hearing held December 6, 1955 to classify the waters of the Chowan River Basin, "We must have patience. We can't pollute our waters for years and expect to clean them up by pressing a button. You just don't do the job like that - it takes time".

It seems quite relevant to note that the Committee has seen fit to classify streams below our neighboring industries of comparable size as that of "E". This classification was evidently given in recognition of the problems with which these other industries have to deal in disposing of their waste water. It would seem only fair and equitable to give Enka the same consideration that has been given our industrial neighbors. In the interest of fairness and to satisfy the policy of the Statute, the Committee should classify Hominy Creek as "E" to allow Enka time to improve its plant facilities voluntarily while the matter of municipal and private sewage disposal is studied concurrently.

PROPOSED CLASSIFICATION CANNOT BE MAINTAINED

The classification of "D" cannot be maintained in the lower segment of Hominy Creek at the present time. As shown by the table on page 72 of the Committee Report, the dissolved oxygen in Hominy Creek is below the standard required of "D" waters. During periods of low stream flow this situation is naturally worse. This natural result is accentuated on Hominy Creek because there is not enough water in the Creek to satisfy the needs of Enka at such times. Therefore, in order to continue production, it is necessary for Enka to obtain as much as half of its total water requirements by pumping water from the French Broad.

The chart on page 70 of the Committee Report shows that the average D. O. in the French Broad at Station 30 is 1.7 p.p.m. which is substantially below that required of class "D" waters. Tests made by Enka at its pumping station, which is located just below Station 30, show similar results.

This water is used only for cooling purposes. Nothing is added to increase the B.O.D. It is merely piped through the plant. However, since the D. O. of this water is low when it is taken from the French Broad and since it gains nothing en route, it necessarily has a low dissolved oxygen content when discharged into Hominy Creek.

When, during periods of low stream flow, large quantities of French Broad water, with its high B.O.D. and low D. O., are discharged into Hominy Creek, the dissolved oxygen of the Creek water is thus further reduced. The amount of French Broad water thus discharged into Hominy Creek is approximately 10,000,000 gallons per day which often exceeds the natural flow of the Creek. At such times, the D. O. of the Creek will always fall below that required of class "D" waters.

Enka can do nothing to improve the quality of the water in the French Broad. As long as the water in the French Broad remains below the standard required of class "D" waters, the water in Hominy Creek below the Enka plant will remain below class "D" requirements during times of low stream flow, because it will contain large quantities of French Broad water.

The spirit of the Stream Sanitation Act enables and contemplates reasonable stream improvement when and where it is economically and practically sound. It is respectfully submitted that it is neither economical nor practical to impose upon Enka the legal obligation to make an enormous expenditure which could not be expected to maintain the class or grade of stream sanitation contemplated during times of low stream flow until the conditions described above can be corrected. In the meantime, Enka is willing and prepared to continue to spend money to do its share voluntarily in solving this problem.

CONCLUSION

By way of recapitulation, Enka is not and never has been a major contributor to the pollution of the French Broad; the present best usage for the waters of Hominy Creek below the Enka plant is industrial waste disposal by every legal criterion in the Statute; an "E" classification on Hominy Creek would not disturb a "D" classification on the French Broad; and a "D" classification on the Hominy Creek below Enka cannot presently be maintained because of the condition of the water Enka must pump from the French Broad at times of low stream flow.

Accordingly, it is respectfully submitted that the policy of the Statute requires a classification of "E" on that segment of Hominy Creek below the Enka plant in order to allow time for Enka voluntarily to make further improvements in its processes and to allow time for others, both public and private, to undertake the difficult, expensive, and sometimes politically complicated program which is necessary to permit any real improvement.

Respectfully submitted this 20th day of November, 1957.

AMERICAN ENKA CORPORATION

By /s/ Maurice Winger, Jr.
Maurice Winger, Jr., Secretary
and Assistant General Counsel

/s/ R. Horace Swiggett, Jr.
R. Horace Swiggett, Jr.
Of Counsel

BEFORE THE
STATE OF NORTH CAROLINA
STATE STREAM SANITATION COMMITTEE
STATE BOARD OF HEALTH
RALEIGH, NORTH CAROLINA

Statement of
Olin Mathieson Chemical Corporation
In Relation To
Proposed Classifications For The Waters
of the
French Broad River Basin

This statement is being filed by the Ecusta Paper Division and the Film Division of Olin Mathieson Chemical Corporation (hereinafter referred to as "O-M") under Section 143-215 (e)(3) of Article 21 of Chapter 143 of the General Statutes of North Carolina. The purpose of this statement is to serve as an aid to the State Stream Sanitation Committee (hereinafter referred to as the Committee) in the discharge of the Committee's stated statutory duty to assign to the waters of the French Broad River Basin classifications which will promote the policy and purposes of Article 21 of Chapter 143 of the Statutes most effectively. Accordingly, this statement contains sections designed to:

1. Demonstrate the legal principles applicable under the Statute.

2. Examine the existing facts as they apply to the particular portion of the French Broad River with which O-M is concerned.

3. State the conclusions which necessarily follow.

LAW

Article 21 of Chapter 143 of the General Statutes of North Carolina will be referred to herein as the Statute. Section 143-215 (a)(3) of the Statute directs the Committee to assign to each identified water of the State (the French Broad River Basin having been identified) such classifications from the series adopted (classifications A-I through E having been adopted) as the Committee deems proper in order to promote the policy and the purposes of the Statute most effectively.

Section 143-211 of the Statute declares the policy of the State to be that the water resources of the State shall be prudently utilized in the "best interest" of the "people". The term "best interest" as used in the Statute must be construed as referring to a composite interest consisting of various interests of many individual persons and organized groups who comprise the "people". Therefore, the Committee must compromise or balance sometimes different individual or group interests for the over all best interest of all the people. We propose to discuss additional provisions of the Statute which materially aid the Committee in performing this function and which are designed to assure the protection of the best interest of the people within the meaning of the Statute.

Section 143-215 (b), requires that each classification, with applicable standards, be adopted with primary reference to an existing or a contemplated best usage to be made of the waters to which such classification would be assigned. The section also recognizes that different classifications with different standards applicable thereto may frequently be appropriate for different segments of the same water. Obviously, by including the requirement that classifications be adopted with

primary reference to an existing or a contemplated best usage, and with recognition that different classifications may be appropriate for different segments of the same river, the legislature intended for this Committee to weigh the facts, and accommodate varying interests and necessities in a complex society. In this way, the legislature recognizes that it is both possible and essential to advance the best interest of the people by variously classifying the river primarily on the basis of dominant usage in various zones along the river. Thus, the legislature contemplated that all individual interests may not be accommodated in one segment, but that each class of interests can be afforded reasonable area of usage in the basin by separately and variously classifying different segments of the basin. The over all composite "best interest" of the "people" is thereby protected and advanced.

Consistent with this conception the General Assembly enacted guides to be used and considered by the Committee in assigning classifications. Section 143-215 (d), contains those guides in the form of criteria for assignment of classifications. The Statute, along with Regulation No. II adopted by the Committee on November 19, 1953, requires the Committee to consider such criteria in assigning classifications and to include in its conclusions published after the hearing, the following factors as related to the waters of the French Broad River Basin:

(1) The size, depth, surface area covered, volume, direction and rate of flow, stream gradient and temperature of the water.

(2) The character of the district bordering said water, including any peculiar suitability such district may have or any dominant economic interest or development which has become established in relation to or by reason of any particular use of such water.

(3) The uses which have been made, are being made, or may in the future be made, of such water for transportation, domestic consumption, industrial consumption, bathing, fishing and fish culture, fire prevention, the disposal of sewage, industrial wastes and other wastes, or any other uses.

(4) The extent to which such water is already receiving sewage, industrial waste, or other wastes as a result of present or past usage of the water, and the relative economic values involved in improving or attempting to improve the condition of such water.

When the statutory criteria section is read with the other cited sections, it is clear that the statutory scheme prescribed by the Stream Sanitation Law is analogous to the statutory scheme of most zoning legislation which recognizes that the best interest of the people can best be protected if reasonable weight is given to each varying interest by zoning areas according to a best usage, generally determined by present predominant usage in each zone.

One of the best guides for determining how the legislature intends an administrative body to conduct itself is the usual section providing for judicial review. Under Section 143-215.5 of the Statute providing for judicial review, the reasonableness of the action of the Committee is in issue along with the practicability, the physical and economic feasibility of disposing of the waste involved and the economic effect of Committee action on the community.

Therefore, a lawful classification assignment must be a reasonable one, and to be reasonable it must reasonably accommodate existing usage to the end that stream conditions are improved without impairing municipal and industrial growth and development in the State. This is consistent with the Committee's policy that it recognizes the importance of continuing present usage and does not intend to require the impossible of present users.

In summary, a fair reading of the Statute, in light of all its sections, requires us to conclude: (1) that the waters of the State are to be prudently utilized for the best interest of the people, which is a composite of various interests of many individual persons comprising the people; (2) that this can best be accomplished by variously classifying or zoning the different segments or zones of the same river and by assigning classifications to each segment or zone with due regard to existing as well as contemplated best usage for that segment or zone; (3) that in order to determine the existing use for any particular segment and whether a different contemplated best use for that particular segment is in the public interest, the legislature has given the Committee statutory criteria as guides, so that the Committee can consider such guides in weighing the different interests within a segment or zone and balance these interests throughout the basin as a whole; and(4) that any classification assigned to any segment must be reasonable under the circumstances, which requires the Committee to give consideration to the practicability and the physical and economic feasibility and the economic effect on a community of action which would be required in any substantial change from the existing usage of a water zone.

Accordingly, classifications should be assigned to segments with definite relation to present usage weighed against the economic values and costs involved in any change of a present use. Therefore, if a dominant economic interest or development has become established in relation to or by reason of a particular use of a segment of water and its use of the water constitutes the principal existing use of such water in that particular segment, and for technical or economic reasons the dominant economic interest's or development's use of the water cannot reasonably accommodate a change of usage in that segment, the existing usage of that segment is the contemplated best usage for the present within the meaning of the Statute. On the otherhand, if the dominant economic interest's or development's use of the water can reasonably accommodate a different usage, then the contemplated best usage in that segment or a portion thereof may be different from the existing usage depending upon other circumstances to be considered by the Committee.

Committee action consistent with such a construction of the Statute will result in substantial improvement of stream conditions without impairment of municipal and industrial existence, growth and development in this State. The Committee will have discharged its statutory duty imposed by Section 143.211 of establishing and maintaining a program adequate for present needs and designed to care for the future needs of the State. Thus, the water resources of the State would be prudently utilized in the best interest of the people of North Carolina.

FACTS

We propose to analyze the facts applicable to our portion of the French Broad River in the light of the statutory criteria for assignment of classifications which this Committee is required to consider and on which it is required to state its conclusions. Accordingly, this section will be broken down into the four statutory criteria for classification prescribed by Section 143-215 (d) of the Statute.

1. The size, depth, surface area covered, volume, direction and rate of flow, stream gradient and temperature of the water

The first of the statutory criteria refers to several conditions which all affect, to a varying degree, the effect of a given pollution load on a stream.

The French Broad River, as it runs through Transylvania and Henderson Counties, is relatively shallow and is characterized by a rocky bed and a good fall. Because of these facts reaeration is good and the river tends to recover its Dissolved Oxygen (D.O.) rather rapidly after receiving material with a high Biochemical Oxygen Demand (B.O.D.). This characteristic lends itself to effective river "zoning" so that a best usage requiring an "E" classification on one segment of the river, will accommodate a best usage requiring a higher classification a few miles down the river. This is graphically demonstrated on page 129 of the Pollution Survey Report. It is there shown that the river has recovered from no D.O. at mile 171 to about 4.0 p.p.m. D.O. at mile 155, well before it reaches Asheville.

Several stream characteristics (volume, rate of flow, and temperature) vary from day to day because of acts of God or because of other circumstances beyond anyone's control. It is recognized in the Pollution Survey Report of this Committee that the dissolved oxygen varies inversely with the stream temperature. Further, the lower the volume and the rate of flow of a stream, the greater is the adverse affect of a given pollution load on the dissolved oxygen in the stream. Thus, during summer periods of high temperature and reduced stream flow and volume, we have a concurrence of two factors each acting to reduce the level of D.O. in the stream and neither being subject to anyone's control.

Neither an industry nor a municipality can make the necessary technical and engineering preparation for correcting pollution, or for meeting set standards for any classification, unless it knows with a considerable degree of certainty the objectives which it must meet. A treatment plant cannot be designed within the area of practibility, or economic feasibility, to meet extreme abnormal conditions of low flow and high temperature. By analogy, flood control protection is designed for protection only up to a certain limit of excessive stream flow. The limits of such protection are economic and practical ones. For economic and practical reasons protection against pollution must be considered in the same light - on a probability basis.

Consequently, we believe and urge that the Committee should recognize in some manner the principle that any of its water quality standards will not be deemed violated whenever certain infrequent and uncontrolled conditions occur as established by some definable limits. It may not be practical for the Committee to set these limits in the form of a combination of maximum temperatures and low flows. However, it is not only practical, but we submit, it is necessary at some point in the proceedings, to set a minimum low flow limit for a given segment of a river. Therefore, we urge the Committee to determine such fixed limitations so that all affected persons on a given segment of a stream can undertake the practical work of planning such remedical action as can be accomplished realistically and practically. These low flow limitations should be set either when classifications are assigned or when a permit or certificate of approval is issued. The limitations should provide that conformity with the applicable standards will not be required when the rate of flow falls below the fixed minimum.

This minimum low flow concept is recognized by the Tennessee Valley Authority, the Ohio River Valley Water Sanitation Commission, and the State of Ohio in its

Miami River Drainage Basin Water Quality Objectives.

Using a formula similar to that which has been used by the Ohio River Valley Water Sanitation Commission, our investigations reveal that at Station No. 16-Mile-F.B. 183.7, a minimum average flow for a period of seven (7) consecutive days that has an average recurrence of once in ten (10) years is 216 c.f.s. We propose that this or some corresponding limit be established as determining the conditions which, when they occur, will relieve persons affected from responsibility for the condition of the water.

Continued long periods of reduced flow may in some other instances also properly give rise to an impossibility of meeting applicable standards even though the rate of flow is greater than the fixed minimum low flow. The mere fact that this possibility exists does not affect the validity of the fixed low flow limit concept.

2. The character of district bordering said water, including any peculiar suitability such district may have or any dominant economic interest or development which has become established in relation to or by reason of any particular use of such water.

Our Company's plants are located in Transylvania County on the Davidson River approximately 8/10ths of a mile from the point at which the Davidson River flows into the French Broad River. The Company owns or controls certain water rights on the Davidson River from the edge of the Pisgah National Forest to its confluence. The district bordering the French Broad River, from the Davidson River to Boylston Creek, is a rather sparsely populated area. A map of recreation areas and sources of irrigation water is shown on page 49 of the Pollution Survey Report. That map shows that there are no camp sites or public recreation areas on that portion of the French Broad River; and neither the Davidson River nor the French Broad River is shown as a significant source of irrigation water for agricultural use in this area.

The O-M paper and cellophane plants are the largest industrial installation in the upper French Broad River Basin and they constitute a dominant economic interest and development in the upper French Broad River Basin which have become established in relation to and by reason of the waters of the Davidson and French Broad rivers. In order to furnish the Committee with information indicating the economic impact of these operations in the upper French Broad River, we submit certain economic data of interest.

As of September 1, 1957, there were 2,203 employess on the O-M pay roll at Pisgah Forest. Approximately 60% of these employees live in Transylvania County, and approximately 40% live in the surrounding counties, principally Henderson and Buncombe counties. Therefore, based upon the national average, these figures indicate that over 11,000 people are directly dependent on wages paid to wage earners employed in these operations. This is particularly significant when you note that the Committee Report on page 17 shows that in 1950 the total population of Transylvania County was only 15,194.

The Pisgah Forest paper mill has been in operation eighteen years, and the Film Division plant has been in operation six years. As evidence of the stability of the employment, approximately 68% of the employees in these operations have five years or more length of service with the Company, and approximately 32% of the employees have fifteen years or more service.

Excluding fringe benefits made available to these employees, wages of approximately

$45,000,000.00 have been paid to employees on the Pisgah Forest pay roll during the period beginning in 1953 through August 1957. In the year of 1956, wages of approximately $10,500,000.00 were paid to the employees working in these two Divisions at Pisgah Forest.

It is interesting to note that in 1939, the year the Ecusta paper plant first began operation, Transylvania County ranked 41st in the State in per capita income. In 1947 it ranked 16th. Due in a large measure to the economic impact of these manufacturing operations at Pisgah Forest, Transylvania County, during the past several years since 1953, has ranked second and not lower than third highest in average per capita weekly earnings of wage earners in the State of North Carolina. Page 17 of the Pollution Survey Report indicates that Transylvania County had the largest estimated percentage gain in the basin in population for the period of 1940-1950. We submit that the Pisgah Forest operation contributed most significantly to these desirable conditions and indices of economic development.

The 1957 assessed valuation for all property in Transylvania County is $23,143,000.00. The 1957 assessed valuation of O-M property in Transylvania County is over $9,000,000.00, or almost 40% of the County total. Therefore, the Company pays over 39 cents of every property tax dollar paid to Transylvania County. During the period from 1953 to 1957, our Company paid more than $3,000,000.00 in North Carolina state and local taxes. During that period the Company paid Transylvania County alone taxes of more than $669,000.00. The North Carolina Franchise taxes were over $146,000.00, and the North Carolina income and intangible taxes amounted to over $2,167,000.00.

Millions of dollars are spent for purchases of materials each year. The largest expenditures for raw materials contribute substantially to the national farm economy as a result of the purchase of great quantities of flax straw. The Ecusta Paper Division alone, so far this year, has already paid over $1,600,000.00 for purchases and freight charges within the State of North Carolina.

Only a cursory reading of the above will demonstrate the substantial effect which these manufacturing operations have had on the Western North Carolina economy in the eighteen year period since the operations were founded. The figures conclusively evidence the fact that these operations are stable, substantial and growing. We hope the Pisgah Forest operations will continue to grow for the benefit of Western North Carolina and all of the people of this State.

The peculiar suitability of the waters of the Davidson and the French Broad rivers, and/or the district bordering these rivers, was probably the major factor in locating the Ecusta paper mill at Pisgah Forest. This economic development has become established in relation to and by reason of the use of such waters. We vigorously assert that this is and has been a reasonable use of a natural resource of this State, and that such development with its inevitable concommitant of waste water disposal is one type of water usage which must be recognized as in the best interest of the people of this State.

3. The uses which have been made, are being made, or may in the future be made, of such water for transportation, domestic consumption, industrial consumption, bathing, fishing and fish culture, fire prevention, the disposal of sewage, industrial wastes and other wastes, or any other uses.

The existing stream uses as found by the Committee's staff are outlined on pages 29 to 34 of the Pollution Survey Report. The report shows that while many streams serve or are available to serve as a major source of water supply for both municipalities and industries, neither the Davidson nor the French Broad rivers serve

as a source of public or municipal water supply. The Report shows that below Station No. 2 - Mile F.B. 214, our Company's use of the Davidson River is the only use of either rivers as a source of industrial water supply. We are informed, however, that American Enka Corporation uses water from the French Broad River for industrial cooling purposes, taking the water through a pumping station located in a recommended "D" segment of the river near F.B. Mile 158, some 33 miles down river from the Davidson River confluence.

The Pollution Survey Report states that the area is generally known as a center of mountain resort activities. The maps on pages 49, 51, and 53, clearly show that there is an abundance of facilities and many additional sites along unused stream areas for swimming, fishing, camping, and picnicking. The many tributaries of the French Broad River, which are not adjacent to centers of population nor to industrial developments, lend themselves to present and potential future development in the realm of tourist and recreational activities. These many tributary streams are also available to serve as a source of high quality industrial process water for future use.

On page 30 of the Report it is stated that the French Broad River and some of its tributaries are used for sewage and waste disposal. Certain segments of the French Broad River which are alleged to be polluted can be isolated from the unpolluted waters, and the basin affords the opportunity for reasonable zoning based upon present usage with very substantial area remaining for all other types of contemplated future uses thereby accommodating to the greatest possible extent the various interests of the people of the State. This does not mean that polluted areas should not or cannot be improved; it means only that existing uses can be accommodated with improvements to be made to the extent that technical and economic feasibility permits.

4. The extent to which such water is already receiving sewage, industrial waste, or other waste as a result of present or past usage of the water, and the relative economic values involved in improving or attempting to improve the condition of such water.

The findings of the Committee on sources of pollution are shown on pages 30 to 34 of the Pollution Survey Report, where it is recognized that the French Broad River, and some of its tributaries, are now used for sewage and waste disposal. On page 94, in table 5, it is shown that the Davidson River, from the mouth of Turkey Creek to the mouth of Davidson River, and the French Broad River, from the mouth of Davidson River to the mouth of Boylston Creek, has waste disposal as its chief present use, and the Committee has seen fit to designate that use as the best usage for these waters, thereby, realistically classifying this section of upper French Broad River. For the purpose of supporting this Committee's proposed classifications for the above portions of the Davidson and French Broad rivers, we submit the following information concerning our operations, the character of our industrial waste, and the steps we have taken and propose to take in attempting to improve our methods of waste disposal.

Ecusta Paper Division is a relatively young industry. It manufactures cigarette and fine papers. It has grown more rapidly than even its very imaginative and courageous founders anticipated. When the mill started in 1939 it pioneered the use of a new source of bast fibers for fine paper manufacturing. In the early years its energies had to be focused on the attainment of the essential qualities of the end product. It had no source for much basic information, and it had hardly started operation when World War II began. Nevertheless, almost from the very start of operations, studies were begun as to the effect of its waste water discharge on the French Broad River. As fast as the Company learned how, it re-

duced the waste load, so that per unit of production, it is putting less waste into the river than it did at the outset.

It is well known that untreated municipal sewage consisting of human and animal wastes has a high count of bacteria of the type which causes typhoid, dysentery, and other diseases. Unlike untreated municipal sewage, the industrial waste from the O-M operation at Pisgah Forest is completely sterile, and contains no bacteria.

The flax-paper manufacturing process requires that we cook flax straw into pulp - a process of cooking out into solution with water the nonfibrous portion of the flax straw. The flax straw is a common farm product in certain areas of our country, and the dissolved nonfibrous part of the flax straw is harmless. The cooking operation simply produces organic matter in the form of waste digester liquor which is sterile, nontoxic, and devoid of bacteria. This organic matter is easily oxidizable by the biological life in the river. Oxygen is required for this biological or biochemical oxidization process, and the source of oxygen for this process is the oxygen dissolved in the river water. Thus, the principal pollution characteristic of our waste is its oxygen demand. The degree to which the level of oxygen is reduced in the river depends on the volume of the water in the stream from time to time, and the temperature of the water at that time. When river flow is high, such use of the dissolved oxygen normally present in the river presents no serious problem. In other words, if the river flow were uniformly high, the problem we are dealing with would be less difficult. The river, in such cases, would better perform its function of carrying off the waste material and subjecting it to oxidation without undue effect, just as it does with waste water runoff from fields and forests when the runoff contains vegetable and other organic material.

By contrast, untreated domestic sewage discharged into a stream constitutes a distinct health hazard. Fortunately, however, treatment for domestic sewage is well known, highly developed and standardized. Because treatment of this type of waste is practicable, the minimizing of this form of pollution is something we have already accomplished. All sanitary sewage from our plant is subjected to primary treatment with sludge digestion. The point is mentioned, not to claim credit, but to illustrate the fact that where there are known and practicable remedies for a pollution problem, our Company has adopted them even though treatment of domestic sewage is by no means a common practice in the French Broad Basin.

Unfortunately, our industrial waste treatment problem is not as simple as a domestic sewage problem. We have been looking for a solution to our industrial waste problem for almost twenty years. Since prior to 1947, we have employed a full time stream sanitation expert, and for the past twelve years our Research and Development Department has been actively engaged in experiments, tests, surveys, and analyses, which might lead to practical solution of our waste problem. We have employed independent consultants and obtained the expert advice and help of the National Council for Stream Improvement whose work we have supported for many years.

We have made some progress and have solved many problems. For instance, our cellophane plant was designed with careful attention to control of waste discharge, and the plant contains elaborate evaporating, recirculating, and recovery installations for this purpose. We have achieved, at considerable expense, a desirable pH control of all our waste water and we incur continuing expense to maintain pH within the limits set by the Committee. This includes a lime neutral-

izing system for acid wastes when pulp mill alkaline wastes are not available for our neutralizing process.

In our paper plant we have adopted many procedures and installed much equipment to reuse water and to collect out of it solid materials, thereby preventing discharge of unnecessary waste to the river. A few examples follow. Some years ago we were able to substantially reduce our waste solids by changing from predigesting and prewashing operations and equipment. We, of course, have "save-alls" on all paper machines, and utilize white water equipment and practices. A fly-ash recovery system has been installed in our power plant, and we absorb as an operating cost the expense of continual disposal of this fly ash rather than to permit this waste to get into the river.

While we have made some progress, the most difficult problem of reducing the B.O.D. of our unavoidable waste remains for solution. We have worked long and hard on this problem. The Research and Development Department has conducted extensive research work looking for a solution. Experiments were carried on in connection with high rate biological filters. A generous size pilot plant trickling filter was designed and constructed on our plant site. This experiment was abandoned as ineffective and impractical after two years of operation. The process of pulp mill black liquor recovery, burning and regeneration of recovered chemicals was considered in great detail. This has been abandoned as impractical and uneconomic because of the relatively small amount of flax pulp which we produce, and the relatively small beneficial effect such a system would afford during periods of low flow of the river.

The above statements are merely examples of the work our Research Department has performed. Further elaboration would unnecessarily lengthen this statement. However, for the Committee's information, we have prepared an Exhibit A, which is attached hereto and is made a part hereof. Exhibit A contains an outline of some of the stream pollution experiments conducted by our research people. It is not an exhaustive list; but it will serve to show in short form the general scope of our research work which has cost us approximately one half million dollars in direct research expense alone, without counting indirect expense nor the larger cost of facilities installed to effect some of the improvements which have been achieved.

Even after spending such a substantial sum we have found that there is simply no practical answer known which will solve our problem so as to permit us to meet D.O. standards applicable to any classification higher than an "E" on segments of the Davidson and French Broad rivers.

The Committee has recommended an "E" classification on the Davidson River, from the mouth of Turkey Creek to its confluence, and on the French Broad River, from the mouth of Davidson River to the mouth of Boylston Creek. The French Broad River below the mouth of Boylston Creek carries a recommended "D" classification. Even with all the work that has already been done, the D. O. standards for the "D" classification cannot now be met on the French Broad, from Boylston Creek confluence to a point approximately 15 miles down the French Broad. This is graphically illustrated on page 129 of the Committee's Report. This, of course, means that much additional work will be necessary to meet the standards for the classifications now recommended in the Report for this section of the French Broad River. We intend to exert our best efforts in the continuing search for ways of reducing the effects of our waste discharge in order that the recommended classifications can be met.

This leads to the question of what we propose to do to help meet the proposed

standards. We expect to discuss this matter separately and in detail at the proper time with the Committee or its staff. For purposes of this statement, however, it may be helpful to give a brief description of the line of action we are pursuing.

In the first place, there is a tremendous amount of research going on throughout the country in the entire field of pollution abatement. This is particularly true with respect to problems in the paper industry, which is known to have some of the hardest technological difficulties to overcome in the search for methods of treating pulp-mill waste. Progress has been made over the years, and it is not too much to hope that the results of all this effort will lead to continuing discoveries of techniques and equipment which will provide more effective and practical treatment methods than are known at present. Today, however, the art has not advanced sufficiently to provide any far-reaching solution of the principal problem with which we are confronted in our particular operation.

Specifically in our own case, we intend to continue intensive work directed to finding within the foreseeable future a means of improving the situation resulting from the discharge into the river of the inevitable pulp-mill cooking liquor, the effects of which are manifested primarily during periods of relatively low river flow. We now have under intensive study a particular remedy involving the development of a plan which, on the basis of our continued progress, we feel may permit us to meet the D.O. standards of the classifications recommended for the French Broad River. Work on the planning of such a project is going forward; and, if the preliminary analysis justifies it, we hope in due course to present a definite project for approval which will probably involve the need for extensive expenditures for a pilot-plant test of various aspects of such a course of action.

It is no doubt important to understand that, notwithstanding the large expenditures incident to its development and operation, such a project, if successful, would, in all probability, result in merely enabling us to improve conditions in the river so that the classifications as now proposed by the Committee can be met. In other words, under present circumstances the proposed "D" classification for the French Broad River beginning at Boylston Creek cannot be met consistently unless we can find a method for reducing the volume of pulp-mill liquor which enters the stream during low river flow periods. The project we are studying would, we are hopeful, permit us to do our part in enabling the proposed classifications to be achieved. To the best of our knowledge, this project is the only feasible method for attempting to achieve the results which the Committee hopes to accomplish through its proposed classifications. Rather than contest such classification at this time, therefore, we intend to proceed with utmost diligence to determine whether such classifications can be met, and we must necessarily point out that we are confronted with a situation where we do not now know and cannot guarantee that the D.O. standards, as proposed, are capable of being achieved. We are quite certain that is is currently beyond the realm of probability to hope to discover any practical course of action which would achieve higher standards than those proposed by the Committee. We doubt if any reasonable person would contend that any higher standards for these particular segments of the French Broad River with which we are concerned are more important to the people of Western North Carolina than the continued operation of the manufacturing enterprises for which our Company is responsible.

CONCLUSIONS

Classification of the French Broad River Basin is designed to promote prudent

utilization of the North Carolina water resources in the best interest of the people of the State. That best interest is a composite interest consisting of various different interests of many individual persons. The Committee must accomplish the purposes of the Statute by balancing the varying considerations, weighing the diverse interests, and "zoning" the river by setting classifications in the light of the statutory criteria and other cited provisions of the Statute. Accomplishing that objective is facilitated in this basin because the physical characteristics of the French Broad River permit effective river zoning by variously classifying its segments.

Because of the sanitary sewage-treatment system at our plants, our enterprise has already minimized to a significant degree its contribution to the coliform density in the river. Further, as table 4 of the Analytical Results indicates, the pH factor in the French Broad River is within normal range in our area - - again because of steps taken in our plants to control this aspect of river condition. Thus, our remaining and difficult problem is one essentially of high biochemical oxygen demand of our waste with the resultant dissipation of dissolved oxygen in the stream, which reaches a critical point during periods of low flow and high temperature. Present development of technical knowledge in the handling of pulp-mill waste liquor of the kind produced by our flax-pulping operations and under the conditions which apply to our operations, has not advanced sufficiently to permit us practically to meet the D_2O_2 standards in any classification higher than "E" along the proposed "E" segment. At best, we can at present only formulate a program which will seek to remedy conditions to the extent which will enable us to meet, in time, the standards for the "D" classification which has been proposed by the Committee for the segments of the river downstream from our plants. While every effort will be continued to meet these standards; it seems clear that the Committee could not justifiably impose standards or require action which would curtail the operations of our Pisgah Forest plants which, in turn, support, to a large extent, the whole economy in the upper French Broad River Basin. At the same time, the proposed "E" classification affects such a small portion of the basin that there is more than sufficient area for the requirements of those interested in recreation, fishing, and animal life. Thus, in this instance, there is a dominant economic interest and development established in relation to, and by reason of, the water of the Davidson and French Broad Rivers, and its use of limited segments of the rivers is the principal existing use thereof and, under the circumstances, the best contemplated use.

Accordingly, the Committee's proposed "E" classification for the Davidson River, from the mouth of Turkey Creek to the Davidson River confluence, and for the French Broad River, from the mouth of the Davidson River to the mouth of Boylston Creek, promotes the policy and the purposes of the Statute most effectively, and should be finally adopted and published as the proper classification for this segment of the French Broad River Basin.

This statement is respectfully submitted in the belief that it will aid the Committee, and other affected persons, in understanding our difficult problem and in achieving the statutory objective of sound protection and utilization of the water resources of North Carolina.

OLIN MATHIESON CHEMICAL CORPORATION

By: /S/ Garza Baldwin, Jr.
Associate Counsel

Statement of
Olin Mathieson Chemical Corporation
In Relation To
Proposed Classifications For The Waters
of the
French Broad River Basin

Exhibit A

Since Ecusta Paper Corporation (now a division of Olin Mathieson Chemical Corporation) started the manufacture of pulp and paper at Pisgah Forest in 1939, the Research and Development Department has studied and evaluated many possibilities for lessening the effects of inevitable waste water discharge into the French Broad River.

Three studies that are basic to an understanding of the problem are, in a real sense, continuous. At the start of the work, they entailed much special work of an orienting nature, but they are now in the nature of regularly scheduled programs. We refer to:

(1) Qualitative and quantitative evaluation of the Paper Division process waste streams.

(2) Qualitative and quantitative evaluation of the Film Division process waste streams.

(3) Qualitative and quantitative evaluation of the neighboring stretches of the Davidson and French Broad Rivers.

Some individual projects studied with a purpose of finding a worth-while abatement method are listed below. In some cases pollution abatement was the sole aim of the projects, whereas in others it was auxiliary; but in every case the pollution abatement effect was of practical importance. In several cases the work proceeded through the laboratory stage to include a pilot plant study; whereas in others only a relatively small amount of study and laboratory work was needed. Also, in some cases full-scale mill trials were necessary before we obtained sufficient data to evaluate the problem properly.

(4) Recovery and pulping of by-product shive.

(5) Elimination of pre-treatment steps before cooking.

(6) Replacement of Fourdrinier-type pulp washers and thickeners with top feed rotary vacuum washing cylinders.

(7) Replacement of original paper machine save-all systems by one of modern American design.

(8) Modernization of breaker beater department.

(9) Pulping studies other than on our present alkaline flax type:

neutral sulphite
acid sulphate
soda
nitric acid
hydrotropic
kraft on local wood species

(10) Boiler plant fly ash recovery and possible by-product uses.

(11) Utilization of spent pulping liquor for road binder.

(12) Utilization of spent pulping liquor with nutrient supplement for fertilizer.

(13) Engineering study of improved flow regulation of process waste streams from cellophane and pulp and paper units.

(14) River aeration by use of gaseous oxygen.

(15) Statistical studies of the assimilating capacity of the French Broad River for our plant effluent.

(16) Bioassay toxicity study on our plant effluent.

(17) Improved fiber and filler recovery from paper machine effluent.

(18) Sulphide recovery and reuse from combined effluents of pulping and casting operations.

(19) Cost study of shipping high strength waste liquors to other special industries for their use and/or disposal.

(20) Soil conditioner studies with:

by-product shive
fly ash plus spent pulping liquor

(21) Pulp production rate regulated to assimilating capacity of river, with necessary seasonal pulp storage to allow continuous uniform paper mill operation.

(22) Chemical oxidation of spent pulping liquor:

chlorine
atmospheric oxygen at both normal and elevated temperatures.

(23) Biochemical oxidation of both spent pulping liquor and total mill effluent:

trickling filter
activated sludge
oxidation lagoon

(24) By-product investigation of sludges from trickling filter and activated sludge processes.

(25) Qualitative and quantitative study of problems presented by addition of wastes from a cellophane unit to the existing wastes from the pulp and paper unit - - prior to construction of cellophane plant.

(26) Design of acid neutralizing facilities for the cellophane plant accomplished prior to construction of the unit.

(27) Chemical precipitation for clarification of wastes:

boiler plant stack gasses
chlorine
spent acid waste
miscellaneous precipitating chemicals such as lime, alum, karaya gum.

(28) Use of cumene hydroperoxide for $B_5O_5D_5$ reduction:

supplementing the trickling filter
simple addition to mill wastes.

(29) Engineering studies of pulp mill redesign needed to accommodate various possible pollution abatement facilities.

(30) Trials of fiber cutters, vacuum washer and screw presses necessary for use with various possible pollution abatement facilities.

(31) Engineering studies of spent pulping liquor burning and recovery equipment integrated into our pulp and paper mill operation:

rotary burner with normal chemical recovery
rotary burner and recovery plus activated carbon by-product
spray type furnace with normal chemical recovery
Greenawald special design of furnace
Zimmerman oxidation unit with chemical recovery unit
Gauvin atomized suspension technique for burning and recovery.

(32) Possible by-product salt production from cellophane plant effluent.

(33) Lagoon storage system for spent cooking liquor.

Several of these studies resulted in pulp and paper mill processing changes that materially lessened the amount of polluting material sent to the river per unit of product. Studies made in advance of construction of the cellophane

unit resulted in our being able to add this production unit to the already existing pulp and paper unit without materially changing the already existing river condition. While most of the projects have ended in disappointing immediate results, our research work has been materially advanced. We have learned much which will serve to guide us in the future toward what we hope will be a solution of the very complex problem.

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

STATE STREAM SANITATION COMMITTEE OF NORTH CAROLINA:

This supplemental brief is hereby respectfully submitted on behalf of the mining industry of Western North Carolina and as a supplement to the brief heretofore filed at the time the public hearing was held by the Committee in Asheville, North Carolina on 24 October, 1957.

When the original brief was prepared we did not have an opportunity to include a statement from the wet ground mica industry and we first submit herewith the statement by Mr. R. T. Dent, Jr., General Manager of Diamond Mica Company, a company employing the wet ground process:

THE USE OF NORTH TOE RIVER
THE WET GROUND MICA INDUSTRY

By R. T. Dent, Jr.

In the immediate vicinity of Spruce Pine, North Carolina there are located three wet ground mica plants along the banks of the North Toe River. The English Mica Company owns two of these plants and the Diamond Mica Company one. Combined they employ approximately 70 people, with 280 dependents.

The purpose of the wet ground mica industry is to grind mica into a fine powder primarily for consumption by paint, plastics and rubber manufacturers.

Mica, the raw material which is ground, is a concentrate of around 95 percent purity or more. The remaining 5 percent or less is composed of sand and very small amounts of clay. In the grinding process the sand is eliminated before there is any discharge into the river. The material that is discharged in the river has a minimum (2 percent or less) of extremely fine clay and in some instances mica which because of its sub-micron particle size is unrecoverable.

The wet ground mica industry has long been aware of the necessity in eliminating all the foreign matter possible before the raw material is ground and then recovering all the processed mica. High recovery is essential to an economical operation.

We are of the opinion that the North Toe River should be given an industrial classification because the mineral industry plays a dominant roll in the economy of our area. Even if the mineral industry were removed from the picture the terrain and climate are not suitable for a high degree of agricultural development.

At the time of the public hearing by the Committee in Asheville on

24 October 1957 the mining industry was first advised of the classification of the streams affecting the mining industry at this time. Those streams are North Toe River, South Toe River and approximately 6 or 7 miles of Crabtree Creek immediately before it flows into the North Toe River. It is noted the classifications suggested for North Toe River and South Toe River is Class D while Crabtree Creek is Class C. We were also informed that at the time the proposed classifications were compiled consideration was not given to silt and tailings from the mining industry as G. S. 143-212 (3)(d) had not been deleted by the General Assembly. It was not known that existing practices would be in controvention of the standards prescribed for classification D in this respect. For the reasons set forth in the brief heretofore and in the oral argument submitted at the hearing in Asheville it is respectfully requested that the requirements under classification D. be such that the present practices employed by the mining industry in this area not be in violation.

At the time of the public hearing protest was registered against a higher classification on Crabtree Creek than on North Toe River and South Toe River. It is our considered opinion the best usage for North Toe River, South Toe River and that portion of Crabtree Creek below the mouth of East Fork Crabtree Creek is for the mining industry. We are not inadvertent to the best usage suggested by the Committee as that of agriculture but believe the economic benefits received in this area through the use of these streams to be almost entirely by utilization by the mining industry. The lower part of Crabtree Creek has been used for mining purposes for 25 years and we now have located on this creek and one of its tributaries two large operations representing tremendous investments.

Again the mining industry would like to advise that it desires to cooperate fully with the Committee and shall appreciate the opportunity working with the Committee in an effort to file a solution to the many apparent problems.

Respectfully submitted,

/s/ Frank H. Watson

Frank H. Watson

STATE OF TENNESSEE
STREAM POLLUTION CONTROL BOARD
CORDELL HULL BUILDING
NASHVILLE 3

November 22, 1957

Mr. J. V. Whitfield, Chairman
State Stream Sanitation Committee
North Carolina State Board of Health
Raleigh, North Carolina

Dear Mr. Whitfield:

The Tennessee Stream Pollution Control Board met yesterday and discussed the interstate pollution problem in the Pigeon, Nolichucky and French Broad Rivers. Mr. S. L. Jones of our staff summarized the proceedings of the public hearing which was held by your Committee in Asheville, North Carolina, on October 24, 1957.

Our Board members feel that the interstate pollution in each of the three streams is serious and that corrective steps must be taken immediately. After discussion the Board passed the following resolution unanimously:

THAT THE CHAIRMAN OF THE TENNESSEE STREAM POLLUTION CONTROL BOARD WRITE THE CHAIRMAN OF THE NORTH CAROLINA STREAM SANITATION COMMITTEE AND REAFFIRM THE TENNESSEE BOARD'S DESIRE TO WORK COOPERATIVELY WITH THE NORTH CAROLINA STREAM SANITATION COMMITTEE TO CORRECT THE INTERSTATE POLLUTION PROBLEMS IN THE FRENCH BROAD, PIGEON AND NOLICHUCKY RIVERS AND REQUEST THE NORTH CAROLINA COMMITTEE TO ESTABLISH STREAM CLASSIFICATIONS ON THESE STREAMS THAT WILL PROTECT THE REASONABLE AND NECESSARY USES OF THESE STREAM WATERS IN TENNESSEE. THE NORTH CAROLINA COMMITTEE ALSO SHOULD BE REQUESTED TO TAKE NECESSARY STEPS AS SOON AS POSSIBLE TO CORRECT THE INTERSTATE POLLUTION PROBLEMS WHICH ARE CAUSING DAMAGE TO THE CITIZENS OF TENNESSEE.

Enclosed are letters from the Tennessee Game and Fish Commission concerning pollution in these rivers. We wish to file these data with the North Carolina Committee in addition to the statement Mr. Jones filed with you on October 24, 1957.

Sincerely yours,

/s/ R. H. Hutcheson
m
R. H. Hutcheson, Chairman
Tenn. Stream Pollution Control Board

RHH/SLJ/mpr

TENNESSEE
GAME AND FISH COMMISSION
CORDELL HULL BUILDING NASHVILLE, TENN.

November 15, 1957

Mr. S. L. Jones, Director
Stream Pollution Control Board
State Department of Public Health
Cordell Hull Building
Nashville, Tennessee

Dear Mr. Jones:

It is with a wish to get results that I want to make a statement on the polluted condition of the Nolichucky, French Broad, and Pigeon rivers in East Tennessee. These streams all flow into Tennessee from North Carolina, and the pollution problem that they carry has been a "thorn in the side" of the fisheries program of the Tennessee Game and Fish Commission for many years. I wish here to describe the effect of this pollution on the fishery of these streams and the potential of this fishery once the pollution problems are under control.

The Nolichucky River enters Tennessee in Unicoi County near the town of Erwin. The river flows some 100 miles before entering the backwaters of Douglas Lake. Approximately 40 miles above the lake is a small dam forming Davy Crockett Lake. This lake is small but its fishery was of major importance on the stream at one time. We have had both verbal and written statements from the people who are familiar with the river in its original form. Before the pollution in this stream became critical, the Nolichucky River was known throughout that part of Tennessee as a choice smallmouth bass stream. It was also one of the best walleye streams in the State. It was an important producer of catfish which were particularly important to people who lived in that area.

There are few other streams in East Tennessee whose polluted condition is more apparent to the public. The people who live in the area are particularly conscious of mine siltation and waste from mica mines. People frequently complain about the thickly silted condition of the stream when mine siltation is at its peak. Davy Crockett Lake itself has served the unfortunate purpose as a reservoir for mica waste as they drift down stream.

Population studies conducted on Davy Crockett Lake in 1947 and 1952 show abnormally low populations of game species. The total weight of fish harvested is also extremely light for reservoir populations in Tennessee. The sample in 1952 produced only 20½ pounds of fish from an area of 3/4 acre.

In the Nolichucky River, the physical pollution itself has been enough to destroy the river as game fish habitat. The light penetration in the water has been reduced to the point that plankton is no longer produced in quantity. Neither will game fish species tolerate the muddied water conditions. The blanket of silt and mica covering the stream bottom has seriously depleted the habitat in which bottom organisms may grow. Consequent depletion of the food supply has resulted in loss of practically all of the game fishery that once existed.

Biologists of the Game and Fish Commission are of the opinion that the Nolichucky River could again become an important fishing stream when the sources of pollution are under control. It will be necessary for the silted bottoms to have an opportunity to clear themselves of the smothering blanket of waste. We feel that we can anticipate an important fishery for smallmouth and largemouth bass, rock bass, bluegills, catfish, and some crappie and white bass from Douglas Lake. We will attempt to re-establish a population of walleyes in the stream. It is even likely that the carp and other rough fish, which are essentially the only species caught now, will provide a better commercial fishery when the river is clean.

There is a strong feeling among the residents of the Nolichucky area that something should be done to correct the pollution in this stream, and many place the responsibility on the Game and Fish Commission. These people do not realize, however, that an interstate problem is not simple to solve. The Tennessee Game and Fish Commission has on occasion made pollution cases for killing fish against mining companies operating in the Tennessee portion of the drainage. These cases are difficult to prosecute and prove in court because of the already-polluted condition of the river when it enters Tennessee. We are trying, nevertheless, to keep our part of the river as free of pollution sources as we can.

The French Broad and Pigeon rivers flow into Tennessee in Cocke County. Each flows approximately 25 miles before flowing together and into Douglas Reservoir. The French Broad is somewhat larger than the Pigeon, carrying over twice the average discharge. The French Broad River very much resembles the Nolichucky River in its physical characteristice. The detrimental pollution in both French Broad and Pigeon rivers is chemical. The situation on the Pigeon River brought about by paper mill waste from North Carolina, is particularly unsightly and detrimental. The color of the Pigeon River in Tennessee is particularly repulsive and is observed by many visitors to that portion of the State who come to see the natural beauty of the mountains. I am sure that the Pigeon River adds little to their enthusiasm for our beautiful waters in that part of Tennessee.

We feel that both streams could be returned to useful fisheries by the proper control of pollution from up stream. The French Broad River would appear to be an excellent smallmouth bass, walleye and channel catfish stream managed as we anticipate managing the Nolichucky River. The Pigeon River is more of the type that should support excellent smallmouth bass and rock bass fishing. Biologists of the Game and Fish Commission have sampled other streams in that area and find similar but unpolluted streams to carry good population of those species.

It is my opinion that success in eliminating pollution from Nolichucky, French Broad, and Pigeon rivers, would be a most profitable accomplishment from all aspects concerned. It would meet with tremendous approval from the fishing public in that area. Such a program would add a great deal of prestige to our fisheries and law enforcement efforts in that area. We are prepared to use every means at our disposal to redevelop these streams once their condition improves. I feel that we could obtain any number of petitions from those areas if such instruments were desirable in bringing about the necessary action. From my own standpoint as a biologist, the control of this pollution problem is essential for the reformation of these streams and that redevelopment of their fisheries is practical and important to the fish management program of the State of Tennessee. We are prepared to do all that we can to produce the desired result.

I am attaching copies of recent letters from personnel of the Game and Fish Commission in response to my request for statements of their views of the situation. Any one of these men would be most valuable as witnesses if you desire their assistance.

Sincerely yours,

C. E. Ruhr
Dingell-Johnson Coordinator

CER:p
cc; Dr. Glenn Gentry

TENNESSEE
GAME AND FISH COMMISSION
CORDELL HULL BUILDING NASHVILLE, TENN.

November 13, 1957

Mr. C. E. Ruhr
Dingell-Johnson Coordinator
State Game and Fish Commission
Cordell Hull Building
Sixth Avenue, North
Nashville, Tennessee

Dear Gene:

I am submitting copies of two population studies made on David Crockett Reservoir during 1947 and 1952. They show a considerable variation in species composition, and a marked reduction in largemouth bass, white crappie and channel catfish. However, Kentucky bass and bluegills were present in 1952 as a strong young-of-the-year class.

I talked with Mayland Muse of Johnson City and Bob Britton of Greeneville concerning the Nolichucky and French Broad rivers before any serious pollution set in. They described both as fine smallmouth bass streams. The Nolichucky was once a noted walleye stream and an occasional individual from the remnant population is still taken.

The French Broad and Nolichucky Rivers resemble New River which heads in North Carolina and flows through Virginia and West Virginia. They have comparable watersheds, volume and bottom types, and New River supports excellent populations of smallmouth bass, yellow walleye and channel catfish.

It is difficult to estimate the potential of the Pigeon River since the dark water limits visual observation. It's size and bottom configuration would indicate good smallmouth and rock bass possibilities.

Sincerely,

/s/ Price W.

L. Price Wilkins
District Fish Biologist

LPW:rsh
Cc: Dr. Glenn Gentry

POPULATION STUDY

Location: David Crockett Lake

Date: October 30, 31 & November 1, 1952

Area: Embayment, 3/4 acres, approximately

Water Temp: 54°F

Material: Liquid Noxfish, 5%

Weather: Clear, cool

Observers: Wilkins, Pfitser, Clabo and French

Game / Non-game fish - 2.1

David Crockett Lake - October 30, 31 & November 1, 1952

Size (inches)	Largemouth Bass		Kentucky Bass		Bluegill		White Crappie		Red-ear Sunfish		Warmouth		Channel Catfish		Redhorse	
	No.	Wt.*	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	62	0-1	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	207	0-11	-	-	-	-	83	0-7	-	-	-	-
3	-	-	6	0-2	139	1-10	1	-	2	-	9	0-3	2	0-1	7	0-2
4	-	-	24	0-9	29	1-1	2	0-1	2	0-1	6	0-4	-	-	8	0-3
5	-	-	3	0-2	10	0-10	-	-	-	-	1	0-2	-	-	6	0-4
6	-	-	1	0-1	9	1-3	2	0-2	-	-	1	0-3	-	-	4	0-6
7	-	-	1	0-2	2	0-8	1	0-2	-	-	-	-	-	-	5	0-10
8	-	-	1	0-4	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1-2
10	-	-	-	-	-	-	-	-	-	-	-	-	1	0-4	1	0-5
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0-7
12	1	0-14	-	-	-	-	-	-	-	-	-	-	2	0-13	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0-15
14	1	1-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	1	1-1	-	-
Total	2	2-2	36	1-4	458	5-12	6	0-5	4	0-1	100	1-3	6	2-3	37	4-6
% Total No.	.2		4.0		51.2		.7		.4		11.2		.7		4.1	

* Weight in pounds and ounces.

David Crockett Lake - October 30, 31 & November 1, 1952

Size (inches)	Flathead Catfish		Legperch		Gizzard Shad		Shiner Minnows	
	No.	Wt.*	No.	Wt.	No.	Wt.	No.	Wt.
0	-	-	-	-	-	-		
1	-	-	-	-	-	-		
2	-	-	-	-	2	-		
3	2	0-1	7	0-2	79	0-11		
4	-	-	-	-	46	0-14		
5	-	-	-	-	7	0-4		
6	-	-	-	-	-	-		
7	2	0-3	-	-	-	-		
8	-	-	-	-	-	-		
9	2	0-7	-	-	-	-		
10	-	-	-	-	-	-		
11	-	-	-	-	-	-		
12	-	-	-	-	-	-		
13	-	-	-	-	-	-		
14	-	-	-	-	-	-		
15	-	-	-	-	-	-		
16	-	-	-	-	-	-		
							98 weighing 0-7	
Total	6	0-11	7	0-2	134	1-13		
% Total No.	.7		.8		15.0		11.0	

* Weight in pounds and ounces.

Sample Total	
No.	Wt.
894	20-5

David Crockett Reservoir
Temperature and D. O.

September 17, 1947

Depth	Temperature	D. O.
Surface	80.5	7.8
10	77.75	6.7
20	77.25	4.6
25	77.0	No reading
30	77.0	3.7
40	77.0	3.4
50	76.5	2.8
60	76.0	

Size (inches) 1/	Species 3/																	
	Largemouth		White crappie		Bluegill		Quillback		Highfin		Gizzard Shad		Channel cat		Warmouth		Carp	
	No.	Wt. 2/	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
0																		
1					4	-												
2	6	-	26	-	4	-					40	-						
3	5	-	2	-	5	-					92	-						
4	4	0-2	1	-	1	-					8	-						
5	2	6-2											1	0-2	1	0-2		
6	2	0-6	19	2-6									1	0-2				
7	1	-	6	1-2														
8	1	-	15	3-12														
9	1	0-8	1	-			1	0-7					1	0-4				
10	2	1-3	2	1-2							2	0-13	3	0-14				
11	1	-					1	0-13			6	3-2	3	1-3				
12	2	1-10							1	1-2	1	0-10						
13	1	1-5					1	1-2	1	1-2			1	0-12				
14	1	1-8					2	2-14	8	10-12			1	2-6				
15	2	-					1	1-10	7	10-8			4	4-4			1	2-1
16							4	8-0	7	13-6								
17							2	5-1	3	6-15			1	1-10				
18							1	2-13	1	2-12								
19																	1	3-14

1/ Lower limit of size class interval listed.
2/ Weights expressed as pounds and ounces.
3/ Common names according to A.F.S. Special Pub. # 1.

Addandum: South side reservoir 150 yards above dam. Water muddy and numerous stumps and snags in area. Biologists present: Dr. Reeve Bailey, Chance, Gentry, Stroud, Manges, Hazlbauer, and Escbrueyer.

Channel catfish reported as "fat".

TENNESSEE

Elizabethton, Tenn.
November 13, 1957

Mr. C. E. Ruhr
Dingell-Johnson Coordinator
Cordell Hull Bldg.
Nashville, Tenn.

Dear Mr. Ruhr:

In regards to the cleaning up of pollution in the Nolichucky, French Broad and Pigeon rivers.

Nolichucky - At one time this river was a good game fish river for bass and wall-eyed pike, according to the older fishermen along the river. Fishing in this river now consist entirely of rough fish. Pollution in this river is caused by siltation from Mica mines. The people have talked with me on different occasions and say they would like to see this river cleared as it would mean a lot to them in money and as a recreational area as well as good fishing.

French Broad - Pollution caused by chemicals. Bass was in this river before pollution. The people feel strongly that this river should be cleared.

Pigeon River - Pollution caused by chemicals. Bass stream before pollution. People along this river also want clearing of river.

About one half of the tourists who visit Gatlinburg, Tenn. must cross these rivers to reach Gatlinburg. The rivers at this time are in bad condition for them to see. Clearing of these rivers and restoration to good fishing would be greatly appreciated by the people in these counties.

Sincerely,

/s/ Sam G. Daniels
Sam G. Daniels

TENNESSEE
CORDELL HULL BUILDING GAME & FISH SIXTH AVENUE, NORTH
NASHVILLE 3, COMMISSION TENNESSEE

Dear Sir:

This is an answer to your request for comments on the pollution of the Nolichucky River. I will attempt to answer each question as you set them down with further comments.

1. The Pollution of the Nolichucky is effecting fishing. During a high tide this river runs red with agricultural erosion as well as mine silt. During the hot dry summer and fall months when the water is very low I have seen see it running red with mine siltation. The latter is when the fishing is most effected.

2. I have about 15 commercial fishermen in Greene County who attempt to catch catfish, carp, and other rough fish. They have been most discouraged in the last 4 years. Dave Crockett lake used to be one of the finest sport fishing lakes in this State. Crappie and bass were abundant. This lake is now abandoned by the sport fishermen. It has nearly filled in with mica washings from mines on Nolichucky River. A small amount of hook and line fishing takes place at some of the creek mouths.

3. Back during the 1930 to 1940 years when the River would run clear part of the year we used to catch many small catfish, 2 & 3 pounds. These are no more. An occasional very large cat is caught. The bass and walleye were everywhere to be caught. Many walleye were caught weighing 15 to 20 lbs. I have not heard of more than 2 walleye being caught in this area in the last 6 years. Older people in this area tell me this was wonderful fishing before the mining began.

4. For years the mica mine siltation has been the most detrimental element of Pollution in the Nolichucky. In April of 53 the manganese mine at Emberville, Tenn. began washing ore directly into the River. It was the thickest and heaviest mud ever seen. Thanks to much hard work by all concerned this mess has been stopped. Many person think the mica silt could affect the fish gills. There is very little reproduction because of the silt washing over the eggs. The local fishermen, commercial and sport, catch a few fish when the river clears up after the mines have been shut down over the week-end. As soon as the mud returns the fish, mostly carp, quit biteing.

5. If this river was cleaned up on the headwaters and a few big tides would come and clean it out all the way down, within 4 or 5 years the walleye, bass, channel cat and blue cat would return in large numbers and fishing would be excellent.

6. Since we got our own mess at Emberville cleaned up the public has been thankful. Now they want to see the job finished. Many farmers say their cattle wont drink from the river. The farmer would be very happy to see clear water again. It is rather difficult to get a fishing violation prosecuted in court under the present circumstances. The judge, lawyer, & defendent all want to know why something isn't done. I doubt if there will be a great celebration when the Nolichucky is cleaned up but I'll bet there will be a sigh of relief that will last down through generations to come.

/s/ Howard Emment
Conservation Officer

CORDELL HULL BUILDING
NASHVILLE 3,

TENNESSEE
GAME & FISH
COMMISSION

SIXTH AVENUE, NORTH
TENNESSEE

November 10, 1957

Mr. C. E. Ruhr
Dingell-Johnson Coordinator.

Dear Mr. Ruhr:

In answer to your request for information about the streams listed in your

letter dated November 7, 1957 I am very glad to do all I can toward the clearing up of them. The information follows in order of your questions.

The pollution on the Nolichucky River has very much so effected the fishing in that stream.

The only fish caught from this stream now is rough fish such as catfish and several different types of the sucker family. (Red Horse and white suckers.

I have talked with many of the older people of this county about the river and the fishing past and present. They tell me that before the river was polluted that all kinds of game fish abounded in the river and that it has now been many years since they have caught any game fish at all. The opinion of the people here is that we (The game and Fish Comm.) could do something about it if we would.

The type of pollution in the "Chucky" is Siltation from Mica mines in N. C. It is very easily observed at most any time. The small particles of Mica floating down the river with a lot of mud and sand is slowly filling the river up.

We could if the stream was cleared up have one of the best Small Mouth Bass and Trout stream East of the Rocky Mtns. That is not only my opinion but also the opinion of some very good fishermen.

I have had a great number of people in this county to tell me they would like to get a petition started to try and get the stream cleared up. I think it would be one of the biggest steps we could ever make towards gaining the cooperation and confidence of the general public all along the Nolichucky River.

I hope this will help in clearing the stream. If you need any letters from citizens of this county, let me know. I can get all you need to this effect.

Sincerely yours
Ralph Meeks Conservation Officer Unicoi Co.

cc: Sam G. Daniels
Dr. Glen Gentry.

TO THE STATE STREAM SANITATION COMMITTEE

OF THE NORTH CAROLINA STATE BOARD OF HEALTH

J. V. WHITFIELD CHAIRMAN

E. C. HUBBARD EXECUTIVE SECRETARY

The Carolina Division of The Champion Paper and Fibre Company at Canton, North Carolina, have watched the work of the Stream Sanitation Committee with interest and confidence, as you have proceeded to survey and classify the streams of the state in accordance with the statutory requirements. Our interests are concentrated on your work and plans for the Pigeon River, our source of water supply and avenue for release of liquid waste. We have reviewed carefully your survey report and feel that the suggested classifications for this stream are equitable, and we feel, practical.

Our operations at Canton consist of the largest bleached sulfate pulp and paper mill in the country, together with a large power plant and chlorine making unit. This plant furnishes direct employment to 3,000 persons with an annual payroll of over 16 million dollars. In addition to this sum the economy of the area is benefited by about the same amount spent for wood, transportation and other services. The material handled requires daily 130 freight cars and 300 trucks. The bulk of the principal raw material - wood - comes from farm wood lots, where company foresters co-operate with the owners, county agents, and state foresters. The objective is a sustained yield forestry program which will benefit the farm income and assist in protection of water yielding land cover. The benefits from our operation are a vital part of the economy of the area.

The Survey:

The report of your survey of the Pigeon made in 1954 and the recommended stream classifications have been studied by all concerned. Company representatives also attended the hearings in Asheville and noted with interest the comments made there. Due to the complex and difficult problem facing us, no presentation was made at that time.

Our technicians have maintained a continual survey of the Pigeon since 1939 and have records of other studies made in the past. It may be of interest to know that for the period of your survey, our records checked within less than five percent plus or minus with those of your engineers. The period of the survey was the worst or equal to the worst on record. Due to deficient run-off the entire volume of the Pigeon at Canton was being used for process water. Partially completed plant alterations and expansion raised the pounds of waste in the liquid stream to a very high figure. The low run-off rate eliminated the normal dilution of the waste and the partially completed mill alterations, combined to set a pollution index for that period, which by past records and recent observations was abnormally high. Nevertheless the conditions at the time of the survey stand as a public record of a condition which must be greatly improved.

The paper industry is the fifth largest industry in the United States and serves in various ways every part of society, commerce, and industry. Like all

the wet industries a vast volume of water is required and creates by this beneficial use, a liquid waste problem. When the North Carolina site for the mill was selected the benefits from the mill operations were presumed of greater communal value than the damage to the stream by the waste burden. The people of the State in their General Assembly agreed with this idea in Chapter 298 of the Laws of 1907, which law provides that a pulp and paper mill releasing waste in the Pigeon River shall be no cause for complaint. This law was approved by the General Assembly February 21, 1907.

Because of the topography of the land in the Canton area it is not feasible to provide large lagoons for the impounding of waste waters as is the practice in non-mountainous regions. Further, the limited volume of the Pigeon River, especially during the summer months does not provide sufficient dilution to alleviate the pollution.

These factors make our problem of stream improvement very difficult and the conventional methods now being employed by new mills in the South have limited application to our problem.

Our problem briefly stated is to effect the maximum internal correction by internal reduction of waste beyond normal practice and then develop processes to reduce the pollution to the point that the stream will meet the proposed classification. We have been working diligently on this stream improvement program for a number of years.

Toward this program, visits have been made and results of treatment in many areas studied. To augment this information mill studies have been in progress for the past ten years. Pilot plants have been operated for complete studies of the expected results by various types of treatment. Process wastes have been studied at the source to appraise the effect of revised operations both on the wastes and the product.

The wastes consist of suspended and settleable solids, dissolved organic matter and dissolved mineral matter. Screening and sedimentation can reduce the solids to a relatively innocuous quantity. Some type of oxidation, either biological or chemical, can reduce the organic load. The dissolved mineral solids seem impossible to reduce beyond certain limits.

During 1957 a large settling pond has been built and about 40 tons per day of settleable solids is being collected. These are removed to a dump. Internal construction of new washing and bleaching equipment have reduced the organic waste load. Pilot plant studies of conventional trickling filters, activated sludge treatment and a newly developed deep type trickling filter have been completed so the potential gains by such treatment may be estimated with confidence.

Future Plans:

For the immediate future, there is planned a series of treatment units. Screening to remove gross solids will be followed by a large sedimentation unit capable of handling ten million gallons per day. Should skimming be found useful in elminiation of floating solids, this plant will be equipped for such service. Following this a large bio-oxidation unit will further treat the waste to reduce the oxygen demand. Internally, the project of diverting the most concentrated wastes to this plant is partially completed. Following the experience with projects outlined further treatment will proceed as indicated by

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stream studies.

Due to the fact that no existing treatment plant indicates the potential gains we desire, negotiations are in progress to design and erect a deep type of trickling filter of plastic plates. Studies at Canton and other areas have indicated this equipment may prove to be a practical approach to waste treatment. Such a plant may be erected in units and should the method prove up to the indicated values, other units will follow.

Timing:

The precise timing of this program cannot be estimated. Design, engineering and construction of new types of equipment cannot be estimated with great precision. A substantial sum has been allocated for this program and you may be assured the program as outlined will be executed with all possible speed.

The reaeration constants of the Pigeon due to the rapid fall and shallow stream are difficult to calculate. Based on our studies over the past years, the indications are that by a reduction of oxygen demand such as is proposed, the stretches of the stream immediately below the plant can be lifted to an "E" class and this combined with dilution will enable the "D" classification to maintain at all times in the area downstream.

We invite the committee or its representatives to visit the plant at any time to observe our operations and particularly to review our progress in waste abatement needed to meet the classifications proposed for the Pigeon River.

As indicated by the foregoing statements and contingent on your committtee permitting a reasonable period for construction of the equipment described, we accept the "E" classification for the Pigeon River from Highway 19-23 (U.S.) to the mouth of Crabtree Creek and a "D" classification beyond that point.

THE CHAMPION PAPER AND FIBRE COMPANY
Carolina Division

/S/ A. M. Fairbrother
Assistant General Manager

December 10, 1957